GET THE FULL SCOOP ON OS X!

A better machine. A better magazine.

MacAddict

www.macaddict.com

AUGUST 2000 NO. 48

Pssst!

9 of the world's top creative pros reveal their best Mac tips and tricks...

Not their secrets on graphics, music, and special effects?! Wow! What are they?

Nah, you'll have to buy the magazine...

D'oh!

In-depth interviews with Moby, Roger Black, Thomas Dolby Robertson, Josh Gabriel, Frank Kozik, Eric Chauvin, Chank Diesel, Michael Kamen, and Andrew Coppa

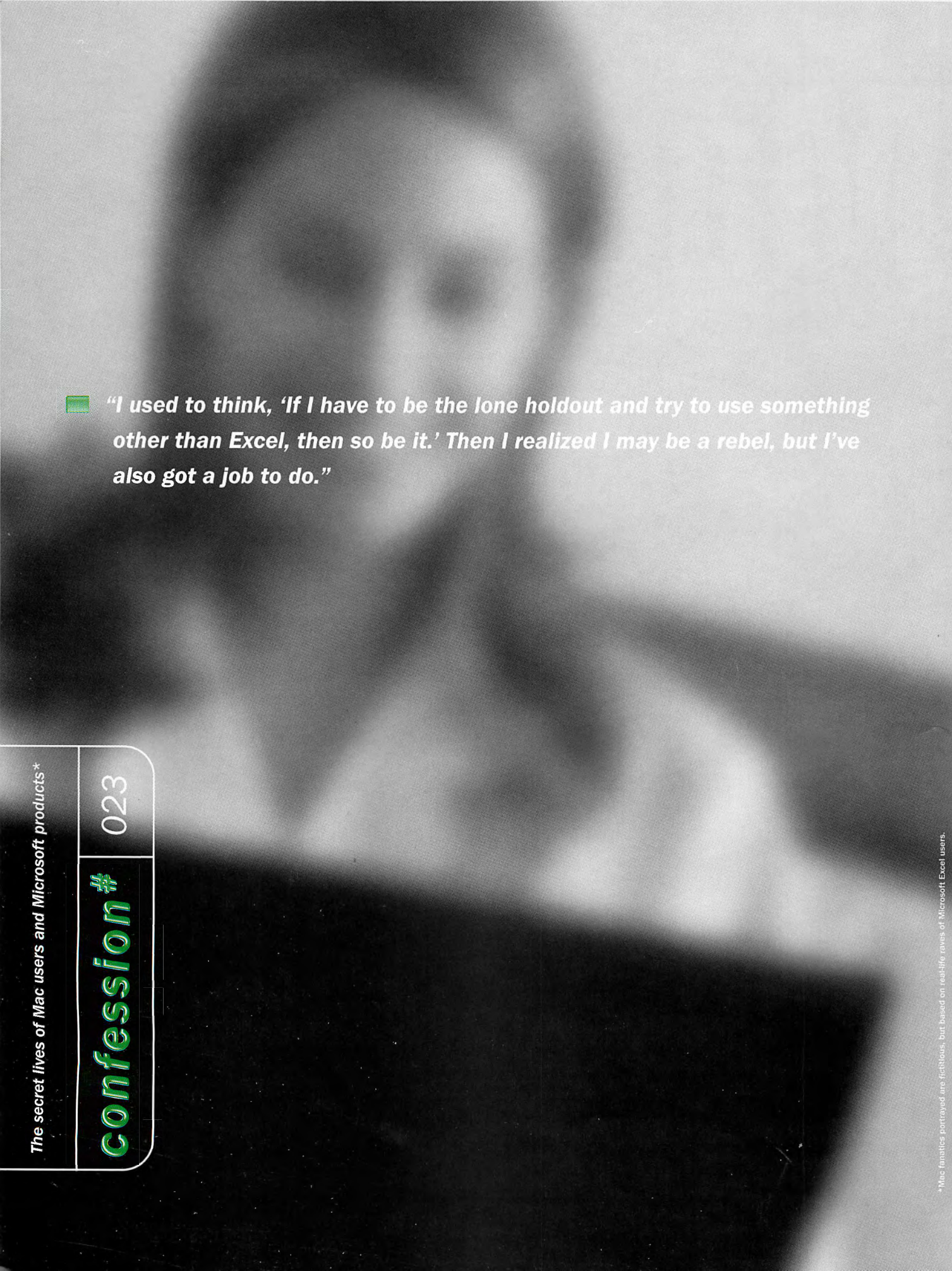
B MOVIES: How to use iMovie with your old Mac

imagine MEDIA WITH PASSION

$7.99 U.S./$8.99 CANADA

08>

0 74470 01096 8



"I used to think, 'If I have to be the lone holdout and try to use something other than Excel, then so be it.' Then I realized I may be a rebel, but I've also got a job to do."

*The secret lives of Mac users and Microsoft products**

confession# 023

*Mac fanatics portrayed are fictitious, but based on real-life raves of Microsoft Excel users.



Microsoft Excel Macintosh Edition

Find out more—visit Mactopia at **microsoft.com/mac**

© 2000 Microsoft Corporation. All rights reserved. Microsoft is a registered trademark of Microsoft Corporation in the United States and/or other countries. Apple, Mac, and Macintosh are registered trademarks of Apple Computer, Inc.

BJC-8200 Printer

MultiPASS C545
Multifunction Printer



Peripheral

Take a quick look around. You'll find a Mac®-compatible Canon peripheral for just about any purpose you can imagine. From high-resolution printers and scanners to the world's best-selling portable printer, we've got what it takes to keep Mac users smiling. And with

CanoScan 630Ui Scanner

Mac

High-Performance Desktop Printers

Choices abound. Now Mac users can pick from an extensive selection of Canon Color Bubble Jet™ Printers. All with photo-quality imaging and razor-sharp black text.

Award-Winning Portable Printer

Need a traveling companion for your iBook™ or PowerBook® G3? Our 3.1 pound* BJC-85 Color Bubble Jet Printer was pronounced "Best of Show" at the Macworld 2000 San Francisco Expo.

*4.5 pounds with AC adapter and optional battery pack. ©2000 Canon Computer Systems, Inc. Canon, BJC, Bubble Jet, Canon Know How, CanoScan, MultiPASS and VAROS are trademarks of Canon Inc. Mac and the Mac logo are trademarks

Vision

more than sixty years of imaging expertise built into every single detail, the term "state-of-the-art" is somewhat of an understatement. Come and see for yourself. Visit us on the Internet at www.ccsi.canon.com/macfriendly, or call 1-800-OK-CANON for more information.

Canon KNOW HOW™



Advanced Flatbed Scanners

Our colorful CanoScan® FB 630Ui Scanner was designed with the iMac™ in mind. And for graphics professionals, there's our CanoScan FB 1200S Scanner featuring groundbreaking VAROS™ technology.

Superior Multifunction Printers

Print. Fax. Copy. Scan. After introducing the world's first Mac-compatible multifunction printer, one good thing led to another: our new MultiPASS™ C545 Multifunction Printer.

of Apple Computer, Inc., registered in the U.S. and other countries. All other product and brand names are trademarks of their respective owners. Specifications subject to change without notice. In Canada, call 1-800-263-1121.

When DVD Disks Go Bad...

Get *Fix*DVD!™ for fast relief!

World's First Diagnostic & Repair Utility for DVD Disks

FixDVD!™ quickly and easily diagnoses problems with DVD-ROM and DVD-RAM disks, and repairs rewritable DVD-RAM disks to help ensure disk interchange on all desktop computer operating systems.

FixDVD! is the first and only utility that:

- Displays if the disk is UDF format compliant (UDF v1.02, 1.5, 2.0, 2.01)
- Reports problems or errors in the format or directory structures
- Modifies disk format to help ensure compatibility between computer systems.
- Repairs damaged disk formats, directory and file header information

FixDVD! supports all manufacturer's and leading third party brand DVD-RAM drives, including: Hitachi, LaCie, Panasonic, Toshiba, and Creative Labs, and DVD-RAM media including: Maxcell, TDK, Panasonic and Plasmon brands.

Best of all, FixDVD! comes free as part of the first and only complete line of personal computer utilities for DVD-RAM drives, supporting all major operating systems.

DVD-RAM TuneUp™ for Mac

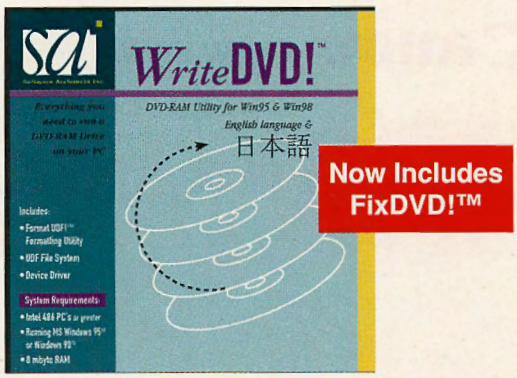
- Speeds file access and files reads with its RocketCache™ architecture
- Supports ALL UDF versions: 1.02, 1.5, 2.0, 2.01 (provides compatibility between Mac OS and Windows implementations of UDF)
- Tests media and re-assigns bad blocks
- FixDVD!™ tests & repairs format & directory structure



100% Disk Interchange with Win2000, NT, 95, 98

WriteDVD!™ for Windows

- The industry standard for UDF: supports Win2000, Win NT, 95 & 98
- Supports ALL UDF versions: 1.02, 1.5, 2.0, 2.01 (provides compatibility between Mac OS and Windows implementations of UDF)
- Tests media and re-assigns bad blocks
- FixDVD!™ tests & repairs format & directory structure



100% Disk Interchange with Mac OS 7, 8, 9

"Tools & Technology for Digital Convergence"

OSTA Compliant UDF

www.softarch.com
Phone: (425) 487-0122
Fax: (425) 487-0467
Email: SalesSoftwarch.com

Software Architects Inc.

Copyright © 1999-2000 Software Architects, Inc. Trademarks are the property of their respective owners.

contents

MacAddict
A better machine, a better magazine.

NO. 48 | AUGUST 2000 | VOLUME 5 | ISSUE 8

highlights

28 The Mac OS X Geek–English Dictionary
If your head is spinning from the geeky OS X terminology that developers, Apple, and certain hoity-toity Mac magazines have been throwing around, relief is on the way. Let the confusion stop here.
BY DAVID REYNOLDS AND IAN SAMMIS



MAYBE NOW WE'LL KNOW what the heck Dave and Ian are talking about.

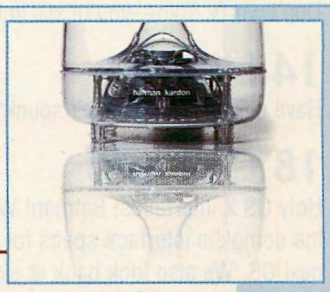
36 Secrets of the Mac Pros
Electronic music master Moby (right), poster artist Frank Kozik, design guru Roger Black, and six other leading Mac pros spill the secrets of their success. Find out how they do it.
BY CATHY LU AND ROBERT CAPPS



FLOATING HAND: $50. The stunned admiration of the Mac world? Priceless.

how to

82 Reflect upon Photoshop
Learn to fake a reflection on your favorite photo. Now that's a mouthful.
BY CHRIS VANDERHOOF



IF YOU SEE two of these, you're deeply disturbed.

86 Ignore Apple's iMovie Advice
Apple's stated system requirements for iMovie translate roughly to "buy a new Mac." Surprised? No? Here's how to ignore that advice safely.
BY DAVID REYNOLDS



OSHA SAYS: Never stand on a canvas chair while holding scissors.

90 Get Your Email in Your Sleep
Yes, you could check your email between waking up and getting on the train to work, but that would require facing the ultimate horror—setting your alarm to go off a few minutes earlier. Here's how you can automate the process and get every last wink.
BY JOSEPH O. HOLMES



THAT'S THE LAST TIME I get drunk and surf Matchmaker.com.

CREATIVE Director Wayne Allen makes his Mac*Addict* debut as designer of our chatty cover.

REPRINTS
For reprints, contact RMS at 717-399-1900.

SUBSCRIPTION QUERIES
Please phone customer service toll-free at 888-771-6222.

Volume 5, Issue 8
MacAddict (ISSN 1088-548X) is published monthly by Imagine Media, Inc., 150 North Hill Dr., Brisbane, CA 94005, USA. Periodical-class postage paid at Brisbane, CA, and at additional mailing offices. Newsstand distribution is handled by Curtis Circulation Co. Basic subscription rates: one year (12 issues + 12 CD-ROMs) U.S. $39.90, Canada $43.95, U.S. prepaid funds only. Canadian price includes postage and GST 128220688. IPM 0962392. Outside the U.S. and Canada, price is $53.95, U.S. prepaid funds only. POSTMASTER: Send address changes to *MacAddict*, P. O. Box 58251, Boulder, CO 80328-8251. Imagine Media, Inc. also publishes *Maximum PC, Business 2.0, Games Business, Next Generation, digitalFOTO, PC Gamer,* and *PSM.* Entire contents copyright 2000, Imagine Media, Inc. All rights reserved. Reproduction in whole or in part is prohibited. Imagine Media, Inc. is not affiliated with the companies or products covered in *MacAddict*. Ride-Along, enclosed in the following editions: A3, B, B1, B2, B3, PRODUCED IN THE UNITED STATES OF AMERICA.

contents

every month

10 Editor's Note
Don't worry, Toto—you're still in Kansas.

14 Letters
Have our readers lost their spunk?

18 Get Info
Holy OS X interfaces, Batman! We've got the complete interface specs for Apple's next OS. We also look back at eight months of iBorg madness, consider the current state of WebObjects and QuickTime, and provide our very own field guide to Aqua.



HE ALREADY TRIED THROWING it against a wall to see if it would stick...

26 Scrapbook
This month, we step back in history with our trade show button retrospective and show you some of the best Mac slogans ever pinned to a T-shirt, jacket, or knapsack.

62 Reviews
Power to the people! Write your own apps with REALbasic, master your music with T-RackS 1.1.2, and win beaucoup bucks in Who Wants to Be a Millionaire, 2nd Edition. Plus, get the 411 on the I-JAM portable MP3 player, Epson PhotoPC 3000Z digital camera, Virtual PC 3.0 with Red Hat Linux, Hard Disk Toolkit 4.0, and more.

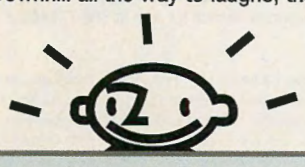
80 Powerplay
It's our annual rundown of game announcements and goings-on from the Electronic Entertainment Expo. Find out what games are coming to the Mac just for your sweaty little hands. *We* certainly can't wait!



PREPARE to go on a Halo bender!

98 Ask Us
Smackin' you with technical info and answers until you call us "daddy."

128 Shut Down
And Bingo was his game-o. Don't worry—it just goes downhill from here. Downhill all the way to laughs, that is!



See ya in a week, I'll be in the lab testing Hawaii 5.0.

SeeMeBuyMe™

Find and purchase products mentioned in *MacAddict* at SeeMeBuyMe. Visit http://www.seemebuyme.com and enter a product code, or call 888-220-1146.

MacAddict

THE TEAM

PUBLISHER **Peter Hirschfeld**
EDITOR IN CHIEF **Robert Capps**

EDITORIAL
EXECUTIVE EDITOR **David Reynolds (technology)**
MANAGING EDITOR **Jenifer Morgan**
SENIOR EDITOR **Cathy Lu (features)**
ASSOCIATE EDITORS **Narasu Rebbapragada (reviews), Ian Sammis**
iDIGITAL MEDIA EDITOR **Kris Fong**
CONTRIBUTING EDITORS **Raf Anzovin, Steven Anzovin, Joseph O. Holmes, Buz Zoller**

ART
ART DIRECTOR **David Ross**
ASSOCIATE ART DIRECTOR **Christopher Imlay**
CONTRIBUTING DESIGNERS **Chris Vanderhoof, Gevin Shaw**
CREATIVE DIRECTOR **Wayne Allen**

MACADDICT.COM
PRODUCER **Niko Coucouvanis**
CONTENT EDITOR **Rich Pizor**

PRODUCTION
PRODUCTION DIRECTOR **Richard Lesovoy**
PRODUCTION COORDINATOR **Hans Hunt**

ADVERTISING
ASSOCIATE PUBLISHER **Don Kimenker**
REGIONAL AD MANAGERS **Michelle Paredes**
SR. ACCOUNTS MANAGER, DIRECT SALES **Ana Epstein**
DIRECTOR OF MARKETING **Mary LaChapelle**
MARKETING MANAGER **Balin Brandt**
AD COORDINATOR **Matt Wheeland**
BUSINESS MANAGER **Doug Haynie**

CIRCULATION
GROUP CIRCULATION DIRECTOR **Kate Bailey**
NEWSSTAND DIRECTOR **Eric Alekman**
NEWSSTAND SALES MANAGER **Jonathan Vernier**
ONLINE MARKETING MANAGER **Mayumi Stroy**
FULFILLMENT MANAGER **Peggy Mores**
DISTRIBUTION COORDINATOR **Quyen Nguyen**
DIRECT MARKETING SPECIALIST **Melissa Moske**

imagine MEDIA WITH PASSION

Imagine Media, Inc.
150 North Hill Dr., Brisbane, CA 94005
(415) 468-4684, http://www.imaginemedia.com

Executive Chairman • Chris Anderson
Vice President/CFO • Tom Valentino
Vice President/Circulation • Holly Klingel
Vice President/HR • Steve Leibman
General Counsel • Charles Schug

IMAGINE BUSINESS DIVISION
President • Michela O'Connor
(Business 2.0)

IMAGINE COMPUTING DIVISION
President • Cheryl England
(MacAddict, Maximum PC, Maximum Linux, MacAddict Network, Maximum PC Network, digitalFOTO)

IMAGINE ENTERTAINMENT DIVISION
President • Jonathan Simpson-Bint
(PC Gamer, PSM, PC Accelerator, Next Generation, Games Business)

Imagine Media is aimed at people who have a passion. A passion for games. For business. For computers. Or for the Internet. These are passions we share. Our goal is to feed your passion with the greatest magazines, Web sites, and CD-ROMs imaginable. We love to innovate, we love to have fun, and we have a cast-iron rule always to deliver spectacular editorial value. That means doing whatever it takes to give you the information you need. With any luck, we'll even make you smile sometimes...Thanks for joining us.

Imagine Media Inc. is part of The Future Network plc.

The Future Network plc serves the information needs of groups of people who share a passion. We aim to satisfy their passion by creating magazines and Web sites that offer superb value for money, trustworthy information, multiple ways to save time and money, and are a pleasure to read or visit. This simple strategy has helped create one of the fastest-growing media companies in the world: we publish more than 100 magazines, 20 magazine Web sites, and a number of Web networks from offices in five countries. The company also licenses 42 magazines in 30 countries. The Future Network is a public company quoted on the London Stock Exchange (symbol: FNET).

THE future NETWORK
Media with Passion

Chairman Chris Anderson
Chief Executive Greg Ingham
Tel +44 1225 442244

www.thefuturenetwork.plc.uk

Bath London Milan Munich New York Paris San Francisco

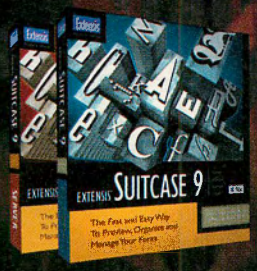


Oh well, at least you can control your fonts.

So many things are out of your control in this world... even your personal space. If you're feeling crushed by your surroundings, just practice this simple technique:

Breathe in. Imagine a world where your fonts are organized. Where you're able to quickly preview fonts, print out sample pages, and make sure your workgroup has access to the same fonts. A place where your system runs faster and crashes less. Breathe out.

Still feeling pressured? Get new Suitcase 9, the font management solution from Extensis. It will take you to a peaceful valley of orderly fonts... in a world that's out of control.



Suitcase 9 includes three free connections to Suitcase Server, so small workgroups can immediately coordinate their fonts.

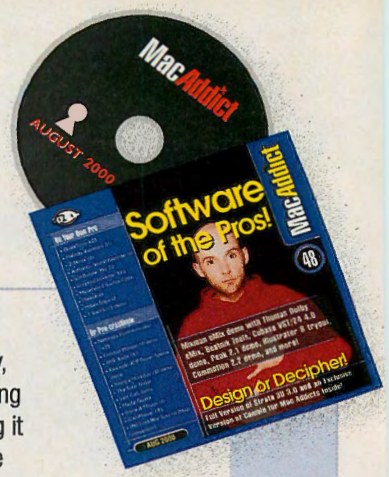
Mac

NEW! Extensis Suitcase 9

www.extensis.com/ca 800.796.9798

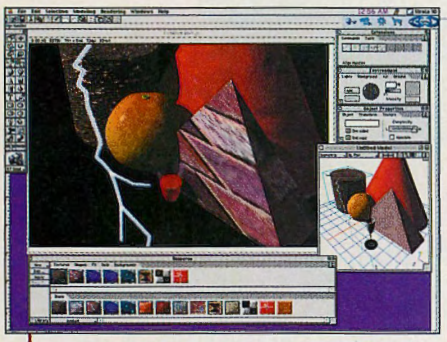
Extensis™

© 2000 Creativepro.com, Inc. All rights reserved. Extensis and the Extensis logo are trademarks of Creativepro.com, Inc. Suitcase is a trademark of Symantec Corporation. All other trademarks are the property of their respective owners.



Things Are Heating Up... So Chill Out with The Disc!

the hype-lights



ORANGE YOU GLAD we're giving you Strata for free!

Strata 3D 3.0 Full Version

The folks at Strata continue their streak of generosity, this time with the multiple-award-winning 3D modeling and animation package, Strata 3D—and we're giving it to you for free! Whether you're cursed with a newbie handicap or have been sprouting 3D-rendered tree rings for years, this easy-to-use package provides all the tools you need to build, animate, and render anything you can imagine. Create your absolute dream date, walk on the wild side of your own prehistoric universe, or design and animate your own cool fantasy creature and impress George Lucas. What's on your mind?



IN LAST CALL, YOU PLAY a bartender intent on making great drinks, flirting, and pulling in the big tips before your shift is up.

Last Call Demo

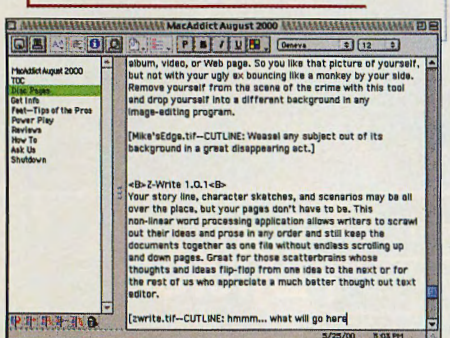
We know you can pound 'em down, but can you mix them? We're not talking about the kind of mixing that'll leave you plastered to the ground, praying to the ol' porcelain god! We're talking *real* bartending. This animated bartending simulation puts you behind a fully stocked bar, tending to customers and mixing drink orders to earn tips. Not alcohol-savvy? Better break out that recipe book, quick. Timeliness and friendliness will get you far—incompetence may get you eighty-sixed!



WEASEL ANY SUBJECT out of its background in a great disappearing act.

Mike's Edge 1.0

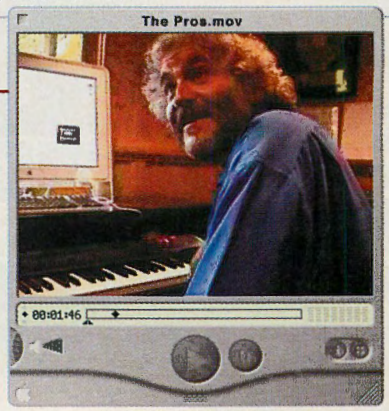
Abracadabra...shazam! Make backgrounds, foregrounds, or any grounds disappear in the blink of an eye. This cool masking tool can pull any subject matter out of the picture, creating masks you can slip into other photos, videos, or Web pages. So you like that picture of yourself, but not with your ugly ex bouncing up and down like a monkey by your side? Remove yourself from the scene of the crime with this tool and drop yourself into a different background in any image-editing program.



NOW IF ONLY we can get it to invent everything, too.

Z-Write 1.0.1

Your story line, character sketches, and scenarios may be all over the place, but your pages don't have to be. This nonlinear word processing application allows writers to scrawl their ideas and prose in any order and still keep the documents together as one file without endless scrolling up and down pages. Great for those scatterbrains whose thoughts and ideas flip-flop from one idea to the next, or for the rest of us who appreciate a better-thought-out text editor.



MUSIC, MOVIES, MACS, AND MAYHEM! Meet the nine Mac pros we tracked down for our special issue. They walk! They talk! And they rock!



Creation is the easy part...

Keeping them under control is another story.



The SIMS™



The game that hits close to home.

Mac

westlake INTERACTIVE

MAXIS

Maxis™ is a brand of Electronic Arts™

ASPYR™
Authorized Electronic Arts™ Distributor

© 2000 Electronic Arts Inc. The Sims, SimCity, Maxis, and the Maxis logo are trademarks or registered trademarks of Electronic Arts in the U.S. and/or other countries. All rights reserved. The Aspyr Media logo is a trademark of Aspyr Media, Inc. The Westlake Interactive logo is a trademark of Westlake Interactive, Inc. Macintosh is a registered trademark and the MacOS logo is a trademark of Apple Computer, Inc. All other trademarks are the property of their respective holders. Made in USA.

editor's note

Oh my god! What the heck did you do to MacAddict?!

Well, boys and girls, you're now gazing upon the fruits of quite a bit of labor on the part of *MacAddict*'s art staff. Over the last several months, we revisited the layout of our beloved magazine and decided it was time to spruce things up a bit. It has, after all, been four years since we originally put together the look and feel of this magazine, and while we're ahead of our time, we're not *that* ahead of our time.

Now, I realize that the modifications we've made to our interior design may have a few of you a little panicked. It shouldn't, though. *MacAddict* is still *MacAddict*. We're not getting serious, backing off, changing subjects, or toning down.

Just to make sure we're staying true to our original purpose, I dusted off my copy of *MacAddict* issue 1 and reread Cheryl England's original *Editor's Note,* in which she laid out exactly where *MacAddict* stood. While a few things have changed (we're not that into OpenDoc and Performas anymore), the fundamental elements of the magazine are indeed the same now as they were back then. To reassure you, I'll list what I consider to be the three pillars of the *MacAddict* philosophy:



JUST A SQUIRREL lookin' for a nut...

• At its heart, *MacAddict* is a how-to magazine. We view the Mac as an übertool. We will always dedicate ourselves to showing you how to do cool stuff, tweak old machines and software for better performance, and take your Mac use one step further. In that vein, we try to make our techniques and ideas as accessible as possible—whether by putting the tools you need on The Disc or on the Web site, or by writing in easy-to-understand, layperson's terms. But just because *MacAddict* magazine is fun and easy to understand, don't make the mistake of thinking we lack tech savvy. We build robots, stream video, trick out LCs with butane torches and hydraulics, generate fake IDs, and overclock G4 processors. We're badasses, and we do it all so we can show *you* how to do it, too.

• *MacAddict* is a graphical magazine. Someone at Xerox PARC came up with the notion that a command line is a very difficult way to navigate through a computer. The Mac built on that idea, developing the current graphical user interface you know and love. We at *MacAddict* likewise feel that strict arrangement of text in columns fails to provide a sufficient interface for navigating through a how-to or conveying the feel of a cool new product. *MacAddict* is designed from the ground up to *show* rather than tell. Most often the best way to explain an idea or technique is with graphics.

We're not getting serious, backing off, changing subjects, or toning down.

• *MacAddict* is for people who are passionate about their Macs. A very enthusiastic community has grown around the Mac platform. We cater to that community. We throw ourselves into our Macs and into our magazine with hopes that you will get to know us, know that we love our Macs, and feel like a part of our family. We answer your questions, read your letters, and participate in the forums at MacAddict.com, because the Mac community plays a big part in who we are and what we do.

Cheryl mentioned each of these things in the first-ever editor's address to *MacAddict* readers. I, as the newest editor, feel that these fundamentals form the foundation of our magazine. We show you how to do cool stuff with your Mac, we teach you things visually, and we embrace you as a community. Changing colors or logos or typefaces doesn't alter our goals, and it won't diminish what *MacAddict* has to offer. Our hope is that our new design will enhance our offerings. Keeping our fundamentals and you, the readers—the most important element of *MacAddict*—in clear view, we will continue to deliver all the things you love. And the magazine will look better, too.

Staff Rants



Jenifer Morgan

Jet-setting Managing Editor, Secret Agent

Q. *What's your fondest* MacAddict *memory?*

A. Editing our July *Calendar* feature—specifically, round 24 at 3 a.m.

Q. *If you were a Mac, which model would you be?*

A. I'd be an iMac DV SE because I have audio-sync problems.



Ian Sammis

iBorg Procrastination Editor

Q. *What's your fondest* MacAddict *memory?*

A. Wow...that's rough—it's been a good year. The impromptu game of office baseball that broke out the other day (complete with foam ball and base paths about two feet long) was pretty cool, though.

Q. *If you were a Mac, which model would you be?*

A. Mac IIci. The thing was the standard Macintosh workhorse machine for more than three years. Allowing for the fact that it came out in late 1989, it was great.



Narasu Rebbapragada

East-Bay-and-Proud-of-It Reviews Editor

Q. *What's your fondest* MacAddict *memory?*

A. When I telefragged Rob in Unreal Tournament and he ended up in little bloody pieces all over the floor. Oops, did I say that out loud?

Q. *If you were a Mac, which model would you be?*

A. I'd be the Mac SE/30. I think that's the one a French foreign exchange student used to make my first fake ID.

SELF PORTRAIT BY NARASU REBBAPRAGADA

Upgrade to new Toast™4 Deluxe

and burn music, multimedia and data CDs. It opens a world of possibilities far beyond the software that came with your CD-Recorder. Now with new PhotoRelay™ software you can view, sort and organize your photos, illustrations, scanned images, movies, sounds, and fonts in customized media catalogs.

You can also pull MP3 files from the Internet, as well as favorites from LPs and cassettes, to create your own compilation CDs. New CD Spin Doctor™ software removes hisses, pops and clicks from old recordings—your music is reborn in stunning digital quality. Get new Toast 4 Deluxe and satisfy all your burning desires. Available from your retailer or contact us at: www.adaptec.com/toastsw4 or 1-800-442-7274.



Macworld

SATISFY ALL YOUR BURNING DESIRES.

Delivering the promise of a digital world.™

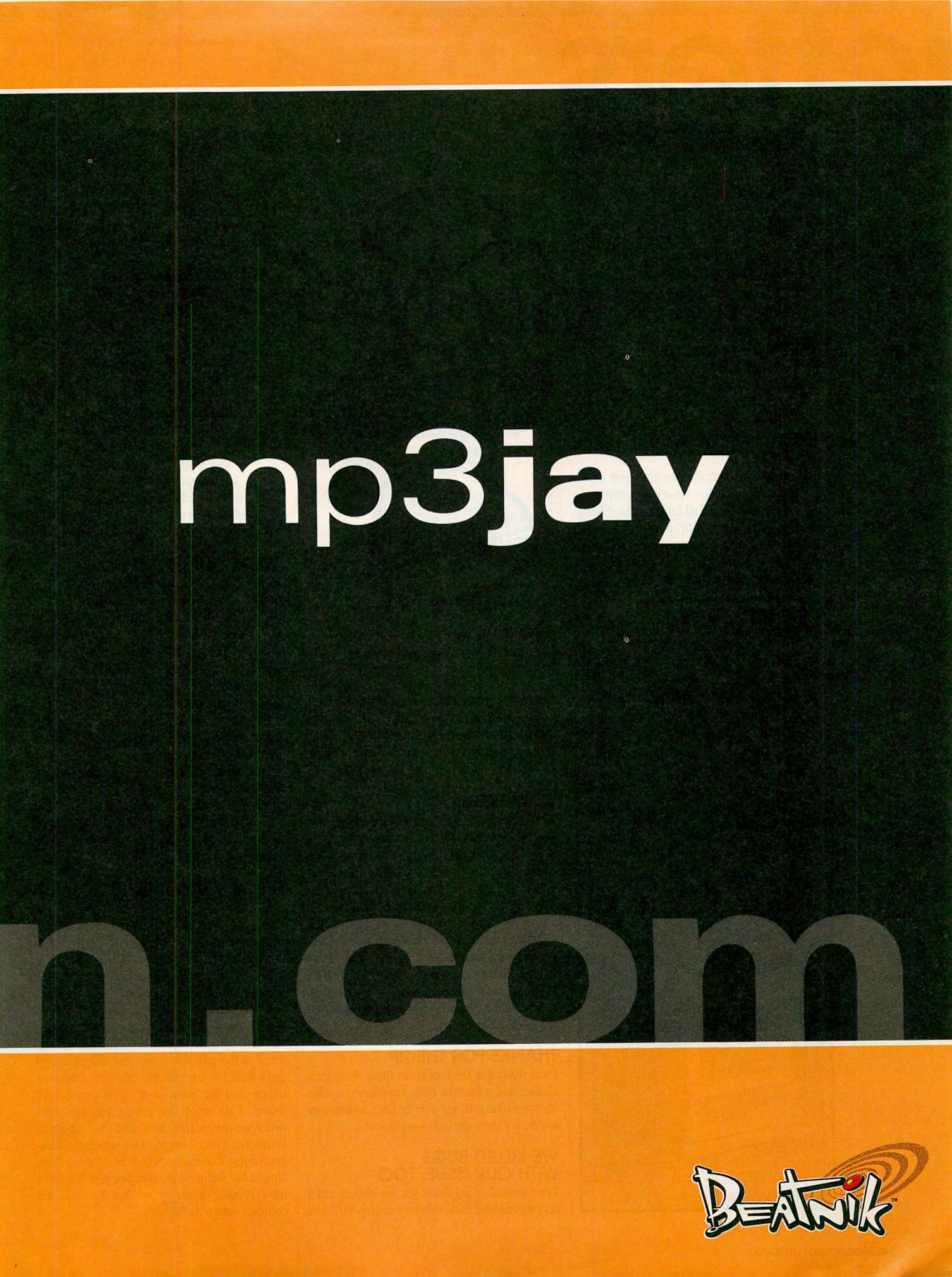
adaptec

©2000 Adaptec, Inc. All rights reserved. Adaptec, the Adaptec logo, the Adaptec tagline, Toast, CD Spin Doctor, and PhotoRelay are trademarks of Adaptec, Inc., which may be registered in some jurisdictions. All other trademarks used are owned by their respective owners. Our software is designed to assist you in reproducing material in which you own the copyright or have permission to copy from the copyright owner.



mixma

Turn your Mac into a recording studio.
Remixing software, interactive radio, and downloadable music tracks.
The next level of advanced listening.


mp3jay
n.com
BEATNIK

letters

You never cease to amaze us. Really.

TALK TO US and other Mac addicts at http://www.macaddict.com/debate.

WRITE TO US: *MacAddict*, 150 North Hill Dr., Brisbane, CA 94005, or email to letters@macaddict.com.
FOR CD PROBLEMS: Go to http://support.imaginemedia.com.
FOR SUBSCRIPTION QUERIES: Call (toll-free) 888-771-6222.



SORRY, IAN, casualty insurance on a cartoon is much cheaper.

ILLUSTRATION BY DAVID "STRUTTIN'" ROSS

HEY IAN, WE'VE GOT AN IDEA...

You folks are demented! Who gives you the right to use marshmallows as a tool to express your sick minds? Have y'all been drinking bong water or something? Your movie this month (Jun/00) is another sick attempt at producing a marshmallow horror flick. It doesn't sell. Here is an idea: Talk Ian Sammis into standing on his head while riding a skateboard down that really crooked street in San Francisco, eating a Twinkie, and playing Myth on an iMac. Much more interesting, don't you think? —Tony McDermott

Recently Sighted

I'm a *MacAddict* reader in the state of Washington. I'm also a devoted Mac junkie and a birdhouse maker. I thought you might like a picture of one of my creations. I lighten pockets by $145 for each birdhouse I make (plus shipping). You can see more about the Mac birdhouse on my Fowl Places site (http://www.fowlplaces.com).—Steve Baran



THOSE OLD MACS have gone to the birds.

BOW-WOW

Macs rule, your magazine rules, the *Letters* section has some funny letters, but I have one major issue: Doesn't anyone who has a Mac own a dog, snake, goldfish, or any pet other than a cat? C'mon! At least one letter every month is about Mac addicts and their cats—can't they get a more, uh...manly (or womanly) pet—a nice big pit bull, a shark, or maybe just an innocent hamster? I happen to have a pet dog and a snake, and while they don't sit on my computer monitor or jump on the keyboard and mess up my work, they are still my loving, faithful companions. Think Different—get a dog!—Josh Sorokin

THANKS FOR THE TIP

I was reading in the June issue about using glass cleaner and a lint-free cloth to enhance a scan. My suggestion is to use a coffee filter, as they usually do not leave any lint.—Joe Nishikida

WE KILLED BUGS WITH OUR ISSUE, TOO

I just wanted to say thank you for putting out a very informative issue this month (Jun/00). I've managed to fix a lot of bugs on my Mac, and I made it run a little faster, too.—Jeff Mueller

MICROSOFT DOES ALL SORTS OF STUFF BACKWARD

I'm not sure how many Web sites the following technique applies to, but it sure as heck works at Apple.com. If you're watching a QuickTime commercial and click the Back button on your Microsoft Intellimouse, the movie you're viewing will play backward. The audio is only semi-backward, but it's still pretty cool. Also, when checking out a QTVR, clicking the back button will rotate the VR to the left, while clicking the forward button will rotate it to the right. Yet another use for the handiest mouse ever!—Jonathan Claydon

WHAT'S UP, DOCK?

In your June 2000 issue, you featured all sorts of how-tos. One of these was to make your application switcher look and function more like the OS X Dock. Well, I checked out the program you suggested, and I was pretty pleased—until I did some searching around and found A-Dock (http://jerome.foucher.free.fr/ADock.html). It attaches an application switcher at the bottom of the screen (yes, you can move it if you desire), but the best part is that the switcher expands! It's just like the Dock, except that you always see a little icon telling you the name of the current application. You can also customize it with one of three included skins, or make your own according to the instructions. The only bad news is that it's $5 shareware, but for all the Aqua-style goodness it sports, it's worth the money.—Colin Deeb

IT'S NOT FOR EVERYBODY

Ever since the beginning, I've been an avid reader of *MacAddict* magazine, which at first seemed innovative compared to more boring publications such as *Macworld*. But lately I've found the content a whole bunch of useless garbage. As a seasoned Mac user, I've found myself alienated from *MacAddict*'s targeted readership, which seems to consist of newbies and intermediate Mac users. The content featured in the past few issues contains nothing I can't find for free on the Internet, and I no longer find the tutorials and tips useful. Even though I do enjoy the humor, you guys have overdone yourselves now and the magazine seems like a joke in itself. Since your target audience doesn't seem to include me, I don't think *MacAddict* will miss my membership. Nor will I miss reading a magazine that has no real content.—Anthony Wu

Man, I have to agree with those attentive readers who say your magazine has become uninformative. Why, I only counted 70-plus informative articles in the June/00 issue. You people are really slacking off. Stop making your magazine so fun and entertaining. I want to see the next issue fun-free, ad-free, humor-free, and with 112 pages chock-full of Apple Tech Info Library articles. While you're at it, replace those staff videos with a nice hour-long PowerPoint presentation. What are you all thinking?—Thomas Hudson

I can't wait until my subscription to *MacAddict* expires. Every month when the new issue arrives, I open it and play the CD, hoping—nay, praying—that I will find something, anything, worth reading or using. Alas, I never do. In fact, it seems to get worse. The attempts at humor are pathetic, the *Letters* section is impossibly dorky, and the information is usually out of date. —William Mahiger

I am an avid *MacAddict* reader, and I have something to say about the recently enlightened PC user and the disillusioned reader's letter (Jun/00, p14). First of all, although I know very well that PCs are glorified tin cans of junk, I have occasionally (in dentists' offices) read samples of PC magazines such as *PC World*. I know what the PC guy was saying—PC mags are so boring! Not only that, they cover the simplest tasks, proving that PC users are not only robotic, humorless drones, but also hopelessly backward!

On the other hand, I actually read *MAD Magazine*, so I find the second letter untrue. You deliver great, useful tips while still managing to be funny. Some other people have said that you should keep *MAD*-style elements out, but I disagree. *PC World* is a good example of a humorless computer magazine. *Macworld* is, too. Keep it up!—Drew Levitt

THEY'LL BOUNCE BACK

Have you people gone mad?! Your June 2000 issue has—I shudder to say it—no Bungie ad on the back! I know we're nearing the new millennium and things are going to change, but I really expected better of professional journalists. What, is one of the writers feeling scorned because Konoko wasn't answering his or her love letters? (She hasn't written back to me, either.)—Andrew Fraticelli

It's true. Our June issue was the first in MacAddict *history that didn't feature a Bungie ad on the back. This is because, for the first time since we launched* MacAddict, *Bungie doesn't have a game to promote. We're sad too, but fear not. Halo is gonna rock!—Ed.*

KEEP WATCH ON THEM FOR US

Pssst....

I have some inside info on Peeps...

I work in Bethlehem, Pennsylvania.

That's where the headquarters of JustBorn is.

JustBorn makes Peeps!

I always suspected something creepy was going on in that building.

It looks like a hospital.

Creepy, huh?

I'll do my part to stop the production of those evil Peeps things.

You get that damn iBorg to work right—"by the time you read this" (yeah, sure). —Jason Thacker

SEE ME SELLOUT?

SeeMeBuyMe seems like a sellout and makes me wonder how independent the articles are. It's like advertising within an article.—Bruce Van Meter

It is too bad that with the SeeMeBuyMe tags, you have joined the ranks of fashion magazines in the gray area between content and catalog.—Sarah Beckley Kramer

SeeMeBuyMe is intended as a service for our readers, not as a source of revenue. Please let us know if you have similar concerns about our intentions, or if, conversely, you value SeeMeBuyMe as a service.—Ed.

HE'S A BRITTLE GUY

Shame on you! In the June 2000 *Get Info* section, I spotted poor little injured Max. He had a cast on his right foot! You let those *Maximum PC* people get him, didn't you? I hope you're taking good care of him now. —Kari Jo Wallace

WE FORGOT

In *Get Info* (June/00, p18), an article called "Graphite vs. Athlon Grudge Match" concluded that the G4 is better if you remember to up Photoshop's memory partition. I assume you mean assigning more memory to Photoshop than the default amount shown in the Get Info window.

Since this was the key item you performed to improve Photoshop performance substantially, don't you think it would have been nice to tell your readers what memory allocation you made?—Steve Laifman

Yup. Our bad. To adjust an application's memory assignment, select that application and choose Get Info from the File menu. Under the memory settings, increase the number in the Preferred Size field. We set ours to 250MB.—Ed.

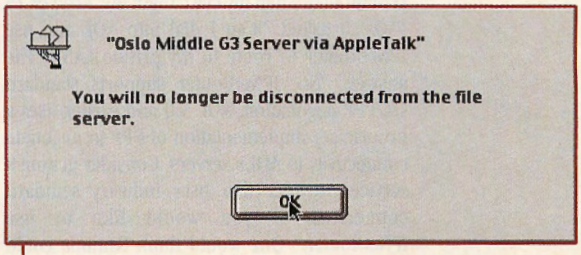
SPEED THRILLS

I read with great interest the article in the June 2000 issue comparing a G4/500 with the AMD Athlon 1GHz. I recently purchased a G4/350 with 192MB of RAM and an ATI 128 video card, and I am surprised at how fast this computer really is. I also recently built a PC with an AMD Athlon 700 overclocked to 735MHz, 128MB of RAM, a Maxtor 10GB 7,200-rpm hard drive, and a Voodoo3 3000 video card. I use both computers, and the G4 actually seems a bit faster.

Apple should change how it rates machines. Someone sees 350MHz or 400MHz and thinks, "That's not so fast." But as your article confirms, they really are just as fast or faster than a comparable PC at double the processor speed. I have been using Macs for 10 years, and the G4 is the first one I can say is truly fast.—John Agres

WE HAVEN'T, EITHER

We were repairing a G3 server in our shop, and I logged on just as another tech working on the server changed the settings. I got this message:



I'M SURE we can fix that.

I was glad I was no longer going to be disconnected! I've never seen this message before!—Mark Herndon

PEEPS WENCH?

I was willing to sit still for the murder of the Peeps wench (does that make me an accessory?), but what have you done with Kris Fong? The only reason I bought your magazine (well, the main reason after I crashed a hard drive with one of your cheesy upgrades) was to hear the smooth, Zen-calm, very soothing voice of Fong occasionally on the staff video. And now she's gone. What have you done with her?—Q. Borba

Check the masthead.—Ed.

You Know You're a Mac Addict When...

...you feel a sense of peace parking your car in lots labeled G3 or G4, and you drive right past lots named P2 or P3.—Jason T. Yow

...you base your self-esteem on Apple's stock price.—Garth Hansen

...you say "Let's rock like it's halftime 1984."—Andrew Sherida

...you tie up company bandwidth by downloading QuickTime for Windows to the Wintel machine they force you to use, just so Steve can announce record download numbers at the next Macworld Expo.—Hamish Blair

letters

WARNING: USE AOL AT YOUR OWN RISK

Ian Sammis's "Share a Single Network Connection across Multiple Macs" (June/00, p41) sounded good for connecting my G3 and iMac, as I had already connected them via the built-in Ethernet. The firewall option was the clincher. I thought it would be so simple. After downloading the 21-day trial of IPNetRouter from The Disc, I decided I'd be thorough and get the full documentation suggested in the Read Me file. I was just about ready to begin installing IPNetRouter when my eye caught the 22nd of 25 FAQs. It asked: "Can I dial into AOL and use IPNetRouter to route to my private LAN?" The answer: "No, IPNetRouter supports standard OT/PPP negotiation. AOL 5.0 and earlier uses a proprietary implementation of PPP to negotiate connectivity to AOL's servers. Consider getting a service provider that uses industry standard connectivity if you would like to use IPNetRouter." One would think Sammis could have included the phrase "except for AOL" somewhere in his article. I spent two full days becoming educated about IPNetRouter, only to realize that my system won't work with it. Since AOL is the largest portal to the Internet, three little words does not seem like too much to ask.—James Barrick

I apologize for the confusion. Before I stopped using AOL, I managed to route an AOL connection, despite the FAQ comment (which I simply didn't see!). I may have gotten lucky, though—your mileage may vary.—IS

WE JUST USE A TEDDY BEAR

Your "MacAddict Super Product Slugfest" comparison (May/00) between cable modems and DSL is off base. Any computer on a dedicated network connection, even DSL, is vulnerable to security breaches, and all of them should run a firewall. My cable modem routinely delivers between 3 and 8 Mbps, and with a $79 copy of NetBarrier, I can sleep soundly at night.—Michael Gibbs

While I agree that any dedicated network connection is a security risk, cable modems come with an additional risk in that others in the same node of your cable network can see your Mac via AppleTalk. In either case, you're right: Folks should invest in some kind of firewall with a DSL or cable-modem connection, whether that's a software solution, like the one you suggest, or a hardware router firewall such as the MacSense XRouter.—DR

BRUSHED-METAL BLUES

Steve Jobs is scaring me. What the heck is he thinking with AppleWorks 6, QuickTime, and Sherlock? He's designing like he's friggin' five years old. The industrial design and interface R&D guys should be rounded up and shot. I'm not looking for cute girly things. Aqua is great for the toylike iMacs and iBooks of first-time computer users, but can you see anybody with any computer knowledge whatsoever using it? I can just see the guys at Skywalker Ranch using hockey-puck rainbow mice and flying, fruit-colored, dysfunctional dialog boxes.—Don Lavelle

HEY YOURSELF!

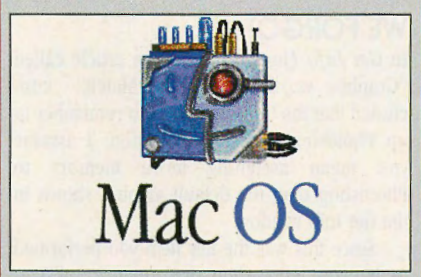
I was sitting around, pondering the imminent breakup of Microsoft, and I noticed that my G4/500 was trying to get my attention! I know, I thought it was odd too, but I think it really does like me! Here's the picture.—Wayne Rugenstein



OH, MY.

WE CAN SUE YOU NOW

The April issue of *MacAddict* inspired me. Using the "Hack Your Mac 2000" article (p24) and my trusty scanner, I came up with this startup screen for my Mac clone.—Tom Oliva



NOW ALL YOU NEED to do is send a check to the artist.

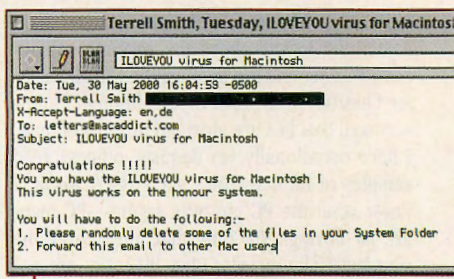
BUT WHAT ABOUT UNREAL?

For the last several years (well, since the early days of Mac gaming), everybody has constantly bitched about the availability (or lack thereof) of games for the Mac OS. Since I ordered Connectix's Virtual Gaming Station for my 333MHz iMac, my bitching days are over. For a measly 20 bucks, my iMac now runs every PlayStation game I've ever bought. My performance has been 99 percent glitch-free, the graphics are superb, and saving games is a breeze.

Connectix has given Mac gamers the ultimate gaming solution. Now I no longer have to pull my hair out trying to find good Mac games. I can just go to the local Wal-Mart and pick up whatever Sony has to offer. The only drawback is that it only runs PlayStation games written and distributed in North America—therefore PlayStation discs written for Europe and Japan won't work. Then again, since I'm neither European nor Japanese, I guess that really doesn't matter, does it?—Brian Dellinger

IAN KNOWS WHAT HE'S TALKING ABOUT

I benefited from the "How to Build an MP3 Player in REALbasic" article (May/00, p68). I'm not a programmer, but I've tried to study and learn REALbasic. I found the step-by-step directions clear, the code helpful, and the time I spent on the project worthwhile. As a result, I have a better understanding of properties, list boxes, and what you can accomplish with the software.—John Foshay



OH, NO! We caught the Mac love virus!

WE DON'T KNOW

Did anyone else notice that the rocket pack in Unreal Tournament looks a lot like the You've Got Pictures icon on the America Online 5.0 welcome screen? Of course, why am I on AOL when there's so much fragging to be done? —Steve "Toy" Zoni

YES, WINDOWS IS OUTDATED AND BORING

Not all of Microsoft's products stink—a select few are quite good. The new Internet Explorer 5 for the Mac, as well as Outlook Express 5 with 128-bit encryption, are examples. Not many browsers can say the Macintosh version totally kills the Windows version. Internet Explorer 5 makes the Windows version seem outdated and really boring.—Chris Daniel

D'OH

I feel it is necessary to tell you about a mistake in your review of Appleworks 6 (Jun/00, p68). You said the text-wrapping ability was new. However, I have been successfully using that feature since version 4, and even then it worked remarkably well. Please be more careful—a feature may not necessarily be new just because you have recently discovered it.—David Stewart

Indeed, this was a mistake, and I apologize. Chalk it up to temporary insanity. It does not change our rating, however.—IS



SCOTT ROSE shows off his allegiance.

new!

ACDSee™ For Mac

The Perfect Software Solution for Digital Image Management







Image viewing at its very best

Visit us at Macworld Conference & Exposition
New York, July 19 - 21 2000
Booth # 1949

ACD
www.ACDSYSTEMS.com

PO Box 36, Saanichton, BC, V8M 2C3
T1.800.579.5309 F1.800.819.2207

Download ACDSee For Mac trial version at

www.ACDSYSTEMS.com/ma

get info

New Macs, new apps, and new addictions.

Mac OS X Sighted Again

A Glimpse of the Mac's Future

During the annual Apple developer get-together this May at the WorldWide Developer Conference, Steve Jobs showed off the latest version of Apple's forthcoming über operating system, Mac OS X, hipping the gathered masses to new features, promised applications, and a revised release schedule. Without showing off any groundbreaking new features, Jobs demonstrated that Apple's engineers have come a long way since the Mac OS X preview in January.

Perhaps the most impressively souped-up part of the new system is Mac OS X's revamped OpenGL support. Although OpenGL isn't new to the Mac, this version is special. It looks great, meshes well with the rest of the system, and sports impressive performance for a developer build. Jobs's demo showed a live update of a PDF composite on a spinning OpenGL bottle. This new bit of wizardry wowed the crowd and demonstrated just how well Mac OS X fuses with OpenGL. The unoptimized OpenGL drivers perform impressively, too, squeezing 57 fps out of Quake III—just wait until Apple fine-tunes *that*. This level of OpenGL support in Mac OS X should make developers of games and 3D apps plenty happy to see OS X ship.

Among the other improvements are a more Mac-like Finder and a refined Dock. The new Finder makes the Desktop in OS X



The Interface

Apple's done some tweaking of OS X's user interface since we first showed it off in the March 2000 issue ("Apple's Revolutionary New OS X," Mar/00, p27). Here's a look at what's new and notable.

A: The Apple menu has gone away to make room for the new application menu, which contains menu commands for the currently active app.

B: The Apple in the center of the menu bar disappears when menus expand far enough to the right to cover it.

C: Applications get shunted to the left side of the Dock to keep things tidy.

D: Documents get shunted to the right side of the Dock to keep things tidy.

E: When you magnify items in the Dock, the icons enlarge without any surrounding background. The last preview of Mac OS X placed the Dock icons on enlarged tiles.

F: This thin white line separates applications from documents in the Dock.

iBorg Timeline

As we write this, *MacAddict*'s first attempt at a mobile robot, the iBorg, continues to suffer from poor engineering, time shortages, and a variety of other problems. To give you a feeling for the history of the project, here's a timeline from its start through the first half of this year.—*IS*

October 1999—Ian and David propose iBorg, begin project. iBorg gets to near-working state; stymied by ADB-I/O communication problems.



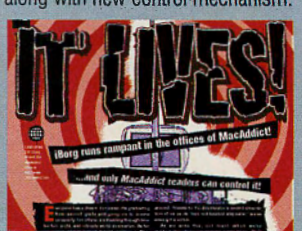
November 1999—Ian loses interest in iBorg. Rob threatens Ian. Ian regains interest in iBorg.



December 1999—Ian figures out skanky hack that lets iBorg almost work. iBook stolen.



January 2000—Publication of initial iBorg article. New iBook arrives, along with new control mechanism.



more like the current one; in previous incarnations of OS X, the new Desktop housed only aliases. The much-hyped and berated Dock now handles aliases (instead of actual files), and it also tries to eliminate confusion by separating applications and documents on the left and right sides of the Dock, respectively, separating the two regions with a white line. The improved Dock shows that Apple is listening to what people had to say about the first incarnation of the Dock *and* that the company is willing to do something about it. Expect more changes to the Dock before OS X ships.

The Applications

The list of Mac OS X-native applications is getting longer, too. Internet Explorer 5 is now up and running on Mac OS X, as is an initial version of Adobe InDesign. One surprising (and welcome) addition to the Mac OS X developer list is Alias Wavefront's Maya, a kick-butt 3D modeling and animation tool. Maya has handled animation duties in films such as *The Matrix, Stuart Little,* and *Star Wars: The Phantom Menace.* Besides Microsoft, Adobe, and Alias Wavefront, the list of Mac OS X–committed developers includes Canon, Dantz, Digidesign, EarthLink, Epson, FileMaker, Hewlett-Packard, id Software, Macromedia, and Palm.

The Schedule

Hand-wringing and liberal interpretations of the words *optional install* aside, Mac OS X is largely on track. Back in January, Jobs announced an aggressive release schedule for Mac OS X: a final release of the OS this summer, with the system preinstalled on all new Macs by January 2001. Apple has reduced the summer release to a public beta, although Jobs hinted that the change is merely semantic. Either way, delaying the "final release" until the start of next year gives us the best of both worlds. Enthusiasts can start using the new system this summer, but Apple and third-party developers will have an extra six months to polish and fine-tune their products for the official release.

Mac OS X has the makings of a power user's operating system that will appeal to newbies as well. It will be stable, responsive, and offer killer high-end applications (such as Maya and Apache)—and it should be pretty, too. Look forward to this drool-worthy release. If you can't wait to find out more, check out this month's article on Mac OS X ("The Mac OS X Geek–English Dictionary," p28).—*DR*

QuickTime Engulfs MPEGs

Apple Throws a Few More Codecs into its Multimedia Stew

A few months back, a sharp debate broke out on Slashdot (the Nirvana of nerd-dom) over the relative merits of the MPEG and Sorenson video compression standards. Apple has apparently decided to end the argument the same way it settled the AVI versus Cinepak controversy a few years back: by including both in the next version of QuickTime. Due out "this summer" (Apple's favorite term for an arbitrary period of time between one month and half a year), QuickTime will add support for both MPEG-1 and MPEG-2 formats.

Besides featuring a few more PEGs, the new QuickTime will also support Flash 4 (up from Flash 3) and cubic QTVR scenes (unlike the older panoramas, these allow you to look straight up and down as well as side to side). It will also include a Velocity Engine-enhanced audio encoder licensed from QDesign (http://www.qdesign.com), designed to compress audio into QDesign's streaming-optimized proprietary audio format.—*IS*

WebObjects Sheds $49,301

Apple's Application Server Suddenly Sells at Consumer Prices

When Apple bought NeXT in late 1996, it acquired a company that had spent nearly a decade searching for a way to turn the technical skills of its staff into cash. After NeXT failed to make a profit on either hardware or operating system sales, its second-to-last, nearly best hope (besides getting bought by Apple for $400 million) was WebObjects, a development tool that links databases and Web servers to create complex sites like the Apple Store (http://www.apple.com/store). Until this spring, Apple kept WebObjects in a holding pattern, effectively continuing NeXT's strategy of selling a few licenses for an exceedingly high price (a full WebObjects deployment license went for $50,000).

Apple has apparently decided to get aggressive with WebObjects. On May 15, Apple dropped the price by nearly two orders of magnitude, to $699. By lowering the price, Apple has turned what had been a product aimed almost entirely at large organizations into one available to high-end consumers (at $699, WebObjects is only a bit more expensive than Photoshop and is cheaper than Macromedia Director). Moreover, taken together with the revision of Mac OS X Server (to version 1.2) and Apple's recent "SciTech Road Show," Apple appears to be trying to move beyond the consumer base that has anchored its comeback so far and regain the sort of broad industry position it held before the collapse in the mid '90s.—*IS*

February 2000—Ian loses interest in iBorg. Rob threatens Ian. Ian regains interest in iBorg.



March 2000—Ian works ferociously on iBorg, gets iBorg to working state except for Web control and camera glitch.



April 2000—Ian loses interest in iBorg. Rob threatens Ian. Ian regains interest in iBorg. Ian fixes iBorg camera glitch.



May 2000—Ian builds iBorg Web control. Mac OS X Server box handling camera suffers two hard disk crashes; one of the motor mounts inexplicably binds up. Ian contemplates iBorgicide.



A Field Guide to Aqua

A Spotter's Guide for Human Interface Watchers

Now that Apple's started to release information on Mac OS X, we can finally bring you some details on the rich variety of GUI elements that populate its new landscape. Here's a guide for enthusiasts.—*IS & DR*



PUSH BUTTON

(*praepilatus detrudo*)

Function: Causes an action to occur.

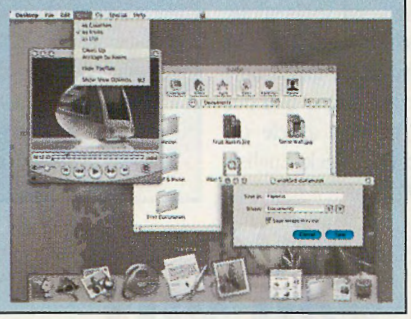
Size: The Aqua Push Button is 20 pixels high, and has a lozenge shape caused by 14-pixel, rounded borders on either side.

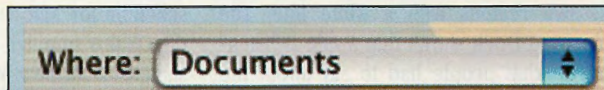
Flock Behavior: Vertically stacked buttons typically separate themselves by 10 pixels, while horizontal lists of buttons tend to maintain 12-pixel distances.

Mating Behavior: Push Buttons occasionally pulse from their usual gray color into a deep blue. We assume this is a courtship ritual.

Habitat: Dialog boxes, sheets, and other control-rich environments.

WE CAUGHT THIS SAVE BUTTON in the middle of a courtship display—note the rich blue color.





POP-UP BUTTON

(*praepilatus surprisius*)

Function: Provides a list of choices in a small space.

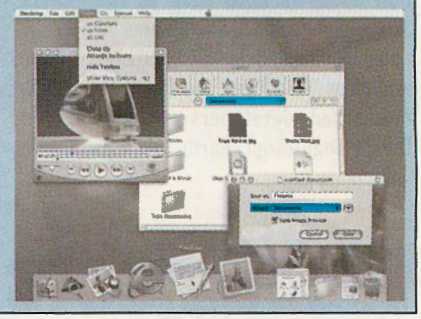
Size: The Aqua Pop-Up Button is 20 pixels high and sports 9-pixel spacers on either side of the button text with a 21-pixel-wide, double-arrow attachment on the right side.

Flock Behavior: When stacked vertically, Aqua Pop-Up Buttons will maintain a 10-pixel space between individuals.

Defensive Behavior: Pop-Up Buttons use their ability to inflate from a relatively small 20-pixel height to much larger sizes to discourage predators. They typically demonstrate this behavior when clicked.

Habitat: Sheets, dialog boxes, and other habitats where controls are typically present.

THE QUIESCENT LOOK of this Aqua Pop-Up Button is a pose—were you to click it, it would abruptly grow.



CHECK BOX

(*squaricus checkoboxi*)

Function: Provides a way to choose one or more options in a small, tidy space.

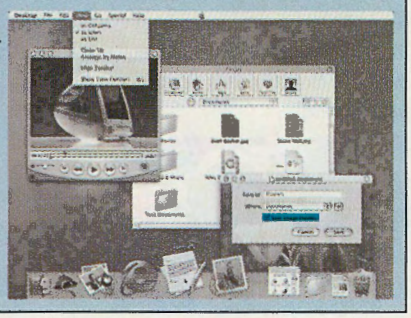
Size: The Aqua Check Box button is 18 by 18 pixels.

Flock Behavior: When found in vertical groups, Check Boxes have a 7-pixel space between them. When found with text labels, the label will stand off to the left by 8 pixels.

Camouflage: The Check Box has two appearances—the more obvious checked appearance draws attention away from other Check Boxes, and the less obvious unchecked appearance blends in with surroundings.

Habitat: Sheets, dialog boxes, and other habitats where controls are typically present.

THE COMMON CHECK BOX, in its flashy, checked appearance.





BEVEL BUTTON

(*praepilatus softii*)

Function: Causes an action to occur; provides a much bigger target than a Push Button.

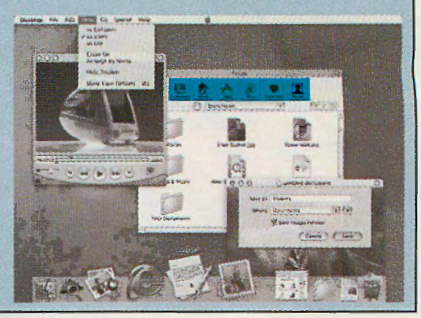
Size: Aqua Bevel Buttons vary in size, but none are smaller than 20 by 20 pixels.

Flock Behavior: While Bevel Buttons can be social, they always maintain a 6-pixel distance from each other.

Size: Bevel Buttons can have one of three height settings, but most breeders of captive specimens choose the smallest setting.

Habitat: Finder windows.

THIS FLOCK OF BEVELED BUTTONS has chosen a Finder window for its nests.



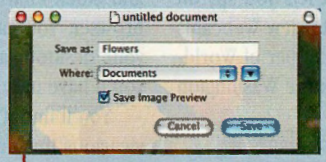
Behaviors to Watch For

Window Layering

Unlike traditional Mac OS windows, Mac OS X windows don't come in layers. Clicking a window will bring it to the front—all other windows stay in the background, even those that belong to the same application.

Sheets

Mac OS X sports a new type of dialog box called a *sheet* that drops out of another window's title bar, like this Save As box. Sheets clarify the relationship between dialog boxes and their associated windows—otherwise you might find it difficult to figure out which window a given Save As box refers to, now that the boxes don't keep you from using other windows while they're in place!



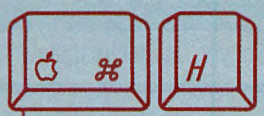
THIS SAVE AS BOX is probably the most common example of a sheet. Note that the sheet's background is slightly transparent.

Lucida Grande

Mac OS X uses a new font called Lucida Grande for its window titles, controls, and menu items. As of press time, Lucida is the one true font—Apple's made no mention of any ability to change the system font.

New Command Shortcuts

Apple has declared two command-key combinations off limits to anything but the system under X:



Command-H is a shortcut for Hide This Application.



Command-M is a shortcut for Minimize Window (in other words, toss the frontmost window into the Dock).

Where Apple Fears to Tread

We Rush In to Peek at Apple's Appearance Schedule

After making big noises about the Internet, international markets, and the gaming market, Apple disappeared from Internet World, the United Kingdom's Apple Expo 2000 in London, and the Electronic Entertainment Expo gaming trade show. However, the company did actually follow through on its DV squawking—it put on quite a show at April's National Association of Broadcasters convention. There Apple announced Final Cut Pro 1.2.5 and deals with Pinnacle Systems and Matrox, plus the acquisition of Astarte's DVD-creation technology—along with its engineers.

Here's a look at where Apple was—and was not—this spring.—*DR*

Expo	Announced Intention	Actually Attended	Angry Apple Fans
Internet World	√ (Jobs to speak)		
Apple Expo (London)	√		√ (Lots of them)
Electronic Entertainment Expo	(Apple had a stylish booth last year, though)		
National Association of Broadcasters	√	√	√ (Angry over controversial *Friends* episode in which Joey announces he once used Windows)

DISCRIBE™
CD Mastering Software
$39.95
*Competitive Upgrade
Record vinyl, tape or voice to CD
Burn MP3 tracks to an Audio CD
Supports virtually all Firewire, USB, ATAPI and SCSI CD-R and CD-RW drives
Supports QPS Que! USB CD-RW
Disc-At-Once (DAO) Audio Support
Burns most popular CD formats
Drag-n-Drop Interface
www.CharisMac.com
CharisMac Engineering, Inc.
10000 Hill View Rd., Newcastle, CA 95658
sales@charismac.com (800) 798-8726
© 2000 CharisMac Engineering, Inc. All other trademarks are the property of thier respective owners.

Shareware Pick of the Month

FIND iCamMaster 1.3.5 on The Disc.

iCamMaster 1.4.0

PRICE: $20 URL: http://www.catdis.com/realcode

If you're the type who relishes James Bond-style secret spy gadgets, you'll probably like iCamMaster, a program that lets you spy on people, places, and things. iCamMaster allows you to view Webcams from your desktop and comes with links to a fair number of WorldCams all over the globe—from New York City's George Washington Bridge to Paris's Champs-Elysées. It'll also let you view weather maps and stock charts right off the Web—without even opening a Web browser. You can tear off any number of Webcams, keep them on your desktop, and choose how often you want them to update—you'll have nary a need to bother with your browser anymore.

You'll find iCamMaster especially cool when you're looking for a vicarious thrill abroad, want to see what's going on in another city, or just want to figure out the best way to get home via a couple of traffic cams. Unfortunately, in the finicky world of Webcams, you can't expect top-notch reliability—sometimes the cams don't work or aren't current. Also, while you can add links to Webcams you find on the Net, they can't use Java or streaming video; they simply display still frames. Even so, iCamMaster is a great diversion.—*CL*



MY WEBCAMS. This is where you store Webcams you've found on the Net—or keep links to your personal baby cam (or spouse cam, if you're into that).

SUPPLIED WEBCAMS. The iCamMaster package supplies you with a number of interesting Webcams.

THE MAIN WEBCAM SCREEN. Link to any number of Web cams, weather maps, and what-not from here.

TRAFFIC CAMS. It's 9:30 p.m. on the Bay Bridge—looks like it's safe to go home now.

TEAR-OFF CAMS. You can tear off any cam so it sits on your desktop, updating all by itself.

STOCK CAM. Get the fascinating blow-by-blow of the stock market's daily happenings. Yawn.

drool worthy Picza PIX-4 scanner

3Com | http://www.palm.com | $449



Now here's a peripheral straight out of science fiction. The Picza PIX-4 scanner scans 3D objects, creating wire-frame models that you can use in 3D modeling software on your Mac. It's limited to scanning fairly small objects (just a few inches in size), but it has a resolution of down to 50 microns. Keen! The Picza is limited to a serial interface at the moment, so if you have a USB-based Mac, you'll have to invest in a serial-to-USB converter as well.—*DR*

LAWSUIT OF THE MONTH

Sony v. Connectix Update

In a sharp blow to Sony's legal fight against Virtual Game Station, Connectix's Playstation emulator, United States District Court Judge Charles Legge dismissed seven of Sony's original nine complaints against the emulator maker. The dismissal came in a summary judgment from the bench that ended Sony's copyright and trademark claims against Connectix. Charges of patent violations, trade secret violations, and unfair competition are still pending. The judge vacated the original July 12 trial date.

If you haven't been following Virtual Game Station's tortuous history, Connectix first released it in January last year. Sony quickly filed a nine-count suit against Connectix, alleging trademark, copyright, and trade secret violations as well as unfair competition. The suit led to an injunction that prevented Connectix from shipping any copies of Virtual Game Station for most of 1999. The United States Ninth Circuit Court of Appeals overturned the injunction on appeal in a ruling that declared Connectix's actions protected fair use. Virtual Game Station returned to the market immediately following the February 10 ruling. Sony filed new charges of patent infringement at that time.—*IS*



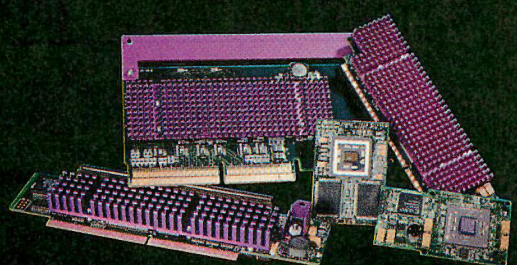
SONNET™

SIMPLY FAST™

It's about speed and agility. Simply add a Sonnet processor upgrade card to your Power Macintosh or PowerBook and leave the competition in your wake. Whenever speed is a factor, more people depend on Sonnet. You should too. For more information, call us at 1-949-261-2800 or visit our website at:

www.sonnettechnologies.com

Visit us at MacWorld New York
July 19-21, Booth # 1707



Predictions for the Expo

We Attempt Psychic Presentism



ILLUSTRATION BY S.BRITT

Longtime *MacAddict* readers often comment on the long (usually more than a month) delay between reality and our news coverage. In an attempt to shorten the lag, we've decided to use our best psychic powers to bring you Macworld Expo news (or the Macworld Conference & Expo, as its crack marketing team has dubbed it) as it happens. Here are our futuristic...er...presentistic predictions.

•At the end of Steve Jobs's keynote, the audience at the Jacob K. Javits Convention Center will spontaneously and inexplicably burst into song, specifically the "Hallelujah" chorus of Handel's *Messiah.* Developers will sing bass, the press will sing tenor, casual attendees will take on the alto part, and Apple employees themselves will star as sopranos. A videographer will film the musical miracle on a DV camera and edit it in iMovie. The preview will be available exclusively through Apple's QuickTime site.—*NR*

•The air conditioning in the Jacob K. Javits Convention Center will break down, New York City will see record-high temperatures and humidity the week of Macworld, and Steve Jobs will still be wearing a black turtleneck and jeans.—*CL*

•An Apple PR representative will spontaneously burst into flame when just one more attendee says "Mac OS Ex" instead of "Mac OS Ten."—*DR*

•Steve Jobs action figures will be the hot-ticket item of the Expo, and Phil Schiller will add another inch to his mullet.—*RC*

•Jonathan Ive will appear onstage to announce the new porcelain-and-hardwood Macintosh cases, available in teak, walnut, mahogany, oak, and cherry. He'll then spend the next 15 minutes arguing that the new iBook cases look nothing whatsoever like toilet bowl lids.—*IS*

Preparing for the Death of Napster

Things to Do Before the Party Ends

As of press time, Napster—the Robin Hood of digital music—will stand trial for copyright infringement. With big-name artists like Metallica and Dr. Dre ordering Napster to ban fans who distribute their music illegally, users are downloading tunes by the drive load in case the free MP3 party abruptly ends. Here's our list of steps you can take to cover yourself should Napster, Macster, and Rapster go down.

• Download all the show tunes you can find. You never know. Someday you might need them, and you definitely don't want to pay for them. Ditto for ditties by Hanson and the BeeGees.

• Download dead people's music. Jim Morrison's not going to sue you from six feet under Paris (although DCC Compact Classics at http://dcccompactclassics.com might!)

• Live dangerously. Download Puff Daddy's music. With so many artists sampled in those tracks, the group'll have to fight for the right to sue you. Of course, that could backfire and they could *all* stand in line to sue you.

• Escape. Move to the Cayman Islands and resume your illegal activity. It's worked for high-profile bankers, lawyers, and the mob.

• If you can't beat 'em, join 'em. Start a band (preferably one with antiestablishment overtones), have a friend swap your music, and sue Napster yourself.—*NR*

techinfotidbit

What Those Nasty Beeps at Startup Mean

Hopefully, you've never heard a series of beeps when starting up your New World-based Mac (those are the translucent ones, for the non-Applish speaking)—but if you have, you know it means something is terribly wrong. Often the beeps are the last thing your Mac does before it just stares blankly at you.

You can do *something,* though. Count the number of beeps—you can translate that number into one of five cries for help on your Mac's part. Here's how they break down. In any case, when you hear these beeps, you should probably contact your authorized Apple service station for more help. You'll find all this info and much more at Apple's Tech Info Library (http://til.info.apple.com).—*DR*

The Beepometer

Number of Beeps	iMac, Power Mac G3 (blue and white), Power Mac G4 (without AGP), PowerBook G3 Series	Power Mac G4 (AGP) PowerBook (FireWire), iBook, iMac (Slot Loading)
1	No RAM installed or detected	Ditto
2	Incompatible RAM installed	Ditto
3	No RAM banks passed memory tests	No good RAM banks
4	Bad ROM checksum	No good boot images in boot ROM or bad system configuration block
5	Bad checksum for ROM boot block	Processor not usable

Who says you can't take your office with you on vacation?



With VST's line of portable USB, FireWire® (IEEE 1394) and laptop peripherals, you can get away from the office this summer without missing a beat.

VST's portable USB products, such as the CD-R/W Drive and the Tri-Media Reader, provide a convenient way for you to easily back-up and transfer your data. If you'r looking for a faster storage solution, VST's FireWire Hard Drives and Zip Drives are perfect for quick data transfer and even storing digital video files. Or, for the best of both worlds, the VST USB/FireWire Combo Hard Drives provide the versatility you need to keep you on the go.

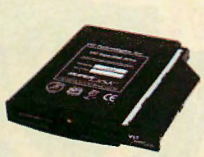
Apple PowerBook users can increase productivity without sacrificing mobility with VST's line of Expansion Bay storage devices and power peripherals. With such products as the Zip and SuperDisk® Drive to the Auto Adapter and Dual Battery Charger, keeping up to speed while on the road is a breeze.

So for all of your portable computing needs stop by www.vsttech.com to learn more about these and other exciting products designed with your mobility, productivity and convenience in mind.

Stop by booth #841 and enter for your chance to win a FireWire peripheral!



USB CD-R/W Drive



PowerBook peripherals



Tri-Media Reader



FireWire Hard Drive



USB/FireWire Combo Drive

Designed for Microsoft® Windows®98

Mac

www.vsttech.com

Iomega, the Iomega logo, Zip, and The Capacity To Do More, are trademarks of Iomega Corporation. All other trademarks are property of other respective holders. Iomega patents protected by patent applications pending in the US and other countries. Apple, Macintosh, the Mac OS logo, PowerBook, and iBook are registered trademarks of Apple Computer, Inc. SuperDisk is a trademark of Imation Corporation.

VST

SmartDisk Personal Storage Systems

scrapbook

A blast from the past in the form of buttons with sharp pins on the back.

Bountiful Buttons

by David Reynolds

Intrepid reader Alejandro Andreatta sent us a collection of pins compiled from the past 14 Macworld Expo shows, and it brought back so many memories for us that we thought we'd share them—after drying the tears, of course.

brief look at megahertz

In 1996 and '97, Exponential promised to ship its 533MHz PowerPC-compatible microprocessor—that is, before Apple pulled the plug on the operation. After three years, we still haven't hit 533MHz, although the G4s are a lot faster at 500MHz than Exponential's chip would have been at 533MHz.

the annoying click

Although it's not strictly a button, this clicker from Iomega was sufficiently annoying in 1998 to burn a place in the memory of anyone who had to listen to its incessant noise.

e•World

In 1995, e•World was still around, and Apple had printed e•World stickers to promote the company's online service. The sticker lasted longer than the service—e•World started in 1994 and went dark in 1996.

better cheddar

Although this button doesn't have anything to do with the Mac universe, we liked its looks. It's about the cheese, after all.

system 7 returns

As part of the campaign to promote System 7 in 1992, Apple created seven different buttons proclaiming reasons to get psyched about System 7.

the rise and fall of Newton

The slogan probably should have said "I bought it" to have guaranteed the Newton's success on its release in 1993.

B.A.: Before Adobe

Back when Aldus was still around in 1993, they used a jolly multicolored tool palette pin to promote PageMaker 5.0.

message to the modern world

We're not sure where this button came from or what it refers to, but the message is apt for developers today: Carbonize or die! (Any 720 players out there?)

PHOTOGRAPH BY AARON LAUER

DRIVER™

YOU ARE THE WHEELMAN™

YOU ARE THE DIFFERENCE BETWEEN THE BIG HOUSE AND A BIG HOUSE IN MALIBU.

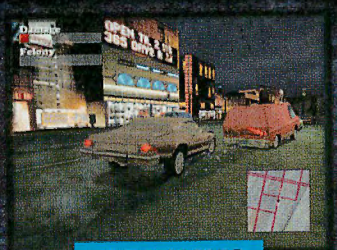
YOU ARE THE FASTEST DRIVER IN THE ENTIRE CRIMINAL COMMUNITY.





SAN FRANCISCO

Film your own classic 70's car chase using incredible Director-Mode.



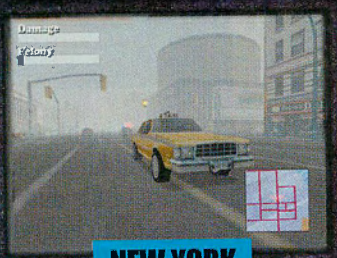
LOS ANGELES

Surveillance. Tailing. Deliveries. Heists. And serious 70's muscle cars.



MIAMI

Getaway through real pedestrians, traffic signals, traffic...and cops!



NEW YORK

No tracks. Just 4 sprawling urban downtowns from NY to San Fran.

TEEN T CONTENT RATED BY ESRB

REFLECTIONS™ INTERACTIVE

ABERSOFT

"A HIGH SPEED THRILL RIDE!"
NEWSWEEK

Driver ©1999 Infogrames, Inc. All Rights Reserved. Created by Reflections Interactive Limited, an Infogrames, Inc. studio. Published and distributed by MacSoft. Reflections and the Reflections logo are trademarks of Reflections Interactive Limited. Infogrames Inc. and the Infogrames logo are trademarks of Infogrames, Inc. All other trademarks are the property of their respective companies.

MacSoft®

www.wizardworks.com/macsoft/

THE MAC OS X GEEK

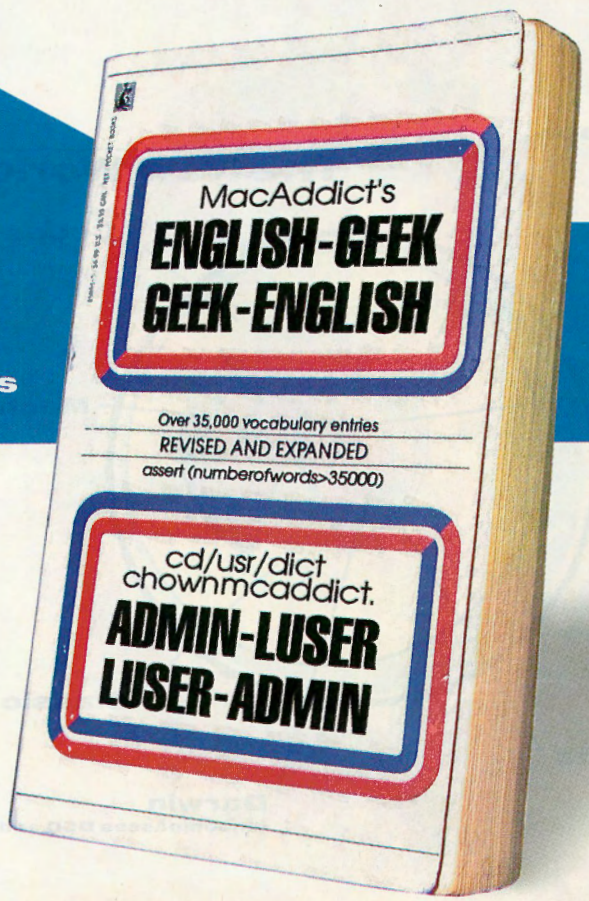
A Journey to the Core of OS

Like a highly anticipated blockbuster movie, Mac OS X will hit this summer—in public beta format. After five years of fits and starts, Apple has finished the underpinnings of an entirely new operating system and is busily putting the finishing touches on its Brave New World. According to Steve Jobs, in a speech at the Worldwide Developers Conference last May, Mac OS X is to software what the current model lineup is to hardware—a completely revolutionary change in the way we compute. Mac OS X will put the cosmic powers of Unix into the hands of everyday Mac users, and it won't confound them with arcane commands and a spit-and-baling-wire user interface. Mac OS X will be an elegant, powerful operating system that will appeal to beginners and power users alike. It won't just look different—it will be more responsive, more stable, and more stylish than any other operating system out there, and it will have better Internet integration to boot. Unfortunately for the average Mac citizen, Apple and the press have conducted most of the preliminary discussions about Mac OS X in a hazy technobabble language, tossing around words like Carbon, Cocoa, Mach, and BSD as if you should know what they mean. But it's OK if you don't get it—you're far from alone. Now, for the first time, we go below the surface of the candied OS X user interface

ENGLISH DICTIONARY

and How X Will Change Your Life

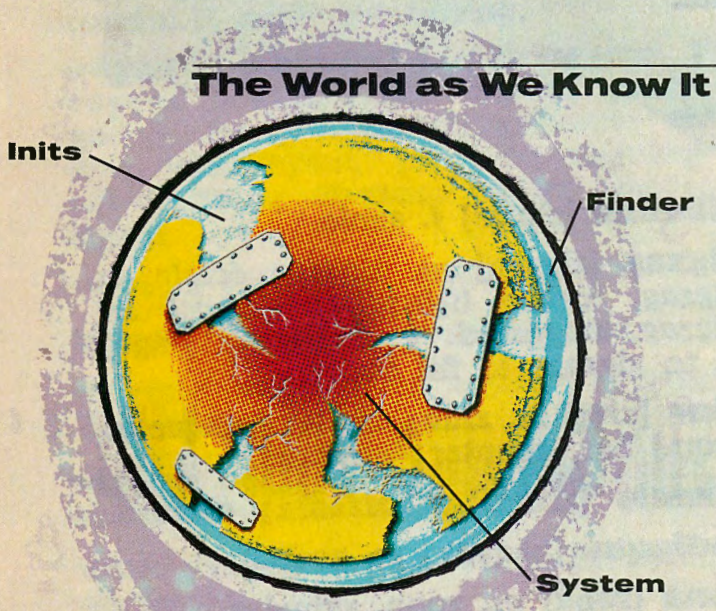
by Ian Sammis and David Reynolds
illustrations by S.Britt



known as Aqua and translate portions of its technical schematics from a language known as Geekspeak into plain English. We'll give you the inside scoop on the definitions of threads, tasks, and shells; tell you why you'll love protected memory; and describe what Carbon, Cocoa, and Classic will do to bring you new power while letting you run your current Mac OS applications without upgrading. All this, and we'll explain everything using words you've actually heard before, in a language you can understand. Also in this issue, find a much more visual Aqua guide in *Get Info*, p20, because when it comes to user interfaces, a picture is worth a thousand words.

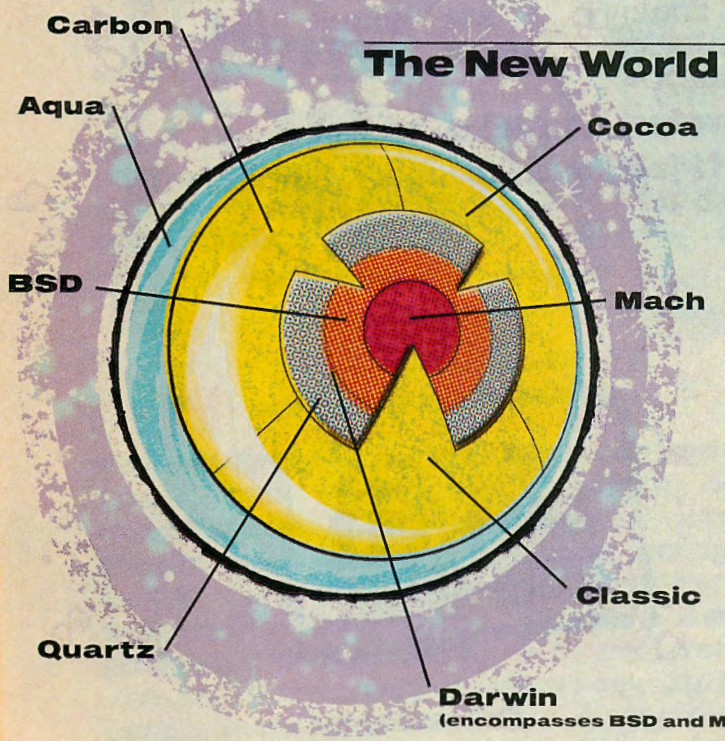
WHEN WORLDS COLLIDE!

Let's start with an overview of OS X and compare it to the current state of affairs on OS 9. It may help you to visualize each OS as a planet—a separate ecosystem capable of supporting life. Okay, maybe that won't actually help you, but it sounds kind of cool.



The current Mac OS (versions 8.x and 9.x) is the world we're leaving behind. After many long years, it's become apparent that it's just not the place it used to be, especially after we've taken a look at what some of the shinier, newer operating systems have to offer. The current Mac OS is missing well-defined layers that mind their own business, thus preventing crashes—the kind of structures you find in more modern operating systems, such as Linux and Windows NT. Instead, archaic things like extensions and QuickDraw, the graphics layer, permeate the entire Mac OS, all the way from the Finder's windows-and-folders surface to deep in the heart of the System's memory management. This is a dangerous position to be in. Engineers have patched the current Mac OS to do tasks it was never designed to handle (for instance, the original Mac OS supported eight colors and could only run one application at a time!).

The result is a system that's poorly suited for many tasks. For instance, it is difficult to write a Mac application (such as Photoshop or even StuffIt Expander) that doesn't hog so much processing power that every other program on the machine stalls. Also, most Mac Internet servers are profoundly slow due to an aging Mac OS core that handles multitasking poorly, especially when the tasks are network requests. Even so, Apple engineers have done a remarkable job of keeping all of the OS's different components working together relatively smoothly for a long time.



Metaphorically speaking, Mac OS X is a geologist's dream. Its well-defined layers work nicely together—only the parts that need to talk to each other *can* talk to each other, and they do so while minding their own business. This keeps Mac OS X stable and makes it easier to swap out various parts of the operating system (such as the networking stack) when necessary. For example, the layer of Mac OS X that runs older Mac OS 9 applications needs to talk to the core of Mac OS X (for processes such as networking), but it can't crash the core of the operating system. As a result, Mac OS X has greater stability overall. Aqua, which also sticks to its own layer, wraps all of the other layers up in one package.

Mac OS X has no application that overreaches its boundaries as the current Mac OS Finder does. Instead, the OS X Finder is an app like any other. It makes polite requests to lower layers of the operating system without brutally tunneling to the center to perform its tasks. The latter approach can cause instability or create problems with portions of the operating system that change from one revision to the next.

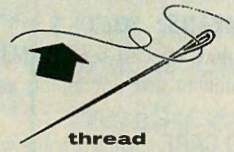
THE MAC OS X GEEK — ENGLISH DICTIONARY

Geekspeak: **Mach 3.0**

English: \mäk thrē-ō\ n: An operating system microkernel initially developed at Carnegie Mellon University, designed to provide operating systems with advanced memory management, interprocess communication, and thread-handling capabilities.

THE CHANGE IN ARCHITECTURE

Mac OS X	Current Mac OS
Mach 3.0	The bowels of the System File



Geekspeak: **thread**
English: \thred\ n: A single point of execution in a program such as an Internet Explorer download in progress.

Geekspeak: **memory management**
English: \mem-rē ma-nij-mənt\ n: The allocating of memory (real or virtual) to individual tasks. Mac OS memory management, although advanced for a personal computer in 1984, has become dated—it does not prevent applications from accessing memory that belongs to other applications or the system itself, and it makes receiving more memory for a running app difficult. Mach has neither of these problems, so it's impossible for programs running on OS X to bring down the entire operating system when they crash.

Geekspeak: **interprocess communication (IPC)**
English: \in-tər-prä-ses kə-myü-nə-kā-shən\ n: The passing of information from task to task. Mach makes IPC very, very fast by tying it to memory management—it can send messages by simply reassigning the memory that contains the message from one task to another, avoiding the slow memory copying necessary with the current Mac OS—or with other OSs, for that matter.

Geekspeak: **task**
English: \task\ n: A running application or server program.

Geekspeak: **scheduling**
English: \ske-jül-ə ng\ vt: The art of allocating time on the CPU—or CPUs on a multiple-processor system—to the currently running threads. Mac OS initially provided only the simplest scheduling capabilities, and the requirement to maintain backward compatibility with older Mac OS software has put a limit on improvements since that time. Mac OS X will have full preemptive multithreading and multitasking and will handle multiple processors smoothly, making it much more responsive than the current OS—with the added benefit of giving Macs with multiple processors much more power under Mac OS X than under Mac OS 9.

WHAT ALL THIS MEANS The core of the current Mac OS is easily the worst part of the system, making it very difficult to run servers or computationally intensive programs (such as 3D applications) with any degree of efficiency. Mach replaces this core and is one of the most beautifully executed operating system cores in existence. It makes programs behave by controlling how much processor time they get, how much memory they receive, and what portions of the operating system they can alter, leading to better responsiveness and stability.

WHY YOU SHOULD CARE With OS X, you won't have to set memory partitions for individual applications—so we can all stop explaining to neophyte Mac users why their lovely new systems with 256MB of RAM are crashing on out-of-memory errors. Poorly written programs can't destabilize the system or other applications, which means that Mac OS X will crash less and that one crashing application won't bring down the entire computer. Applications won't stall out other apps; well-written multithreaded apps won't even stall *themselves* out, meaning that you won't have to spend precious minutes staring at progress bars or the spinning wristwatch. There are some other advantages as well.

- **Multiple Processors** The current Mac OS can't easily take advantage of multiple processors—developers must specially program applications in order for them to detect and spawn threads onto additional processors. If they don't, these additional processors sit idle. Mach, however, automatically assigns each thread to whatever processor is least busy at the moment, so a two-processor system will nearly always run much faster than a single-processor system—and not just when it's running specially written code.
- **Multiple Operating Systems in Parallel** Mach acts only as the inner core of the operating system, so it's very easy to build different, higher-level operating system components that all work in parallel on top of Mach. Mac OS X takes full advantage of this. Engineers have reworked portions of the current Mac OS to run above Mach, providing the Carbon (see "Carbon," p33) subsystem that runs in parallel with the original OpenStep calls (see "Cocoa," p33). This lets Apple provide a way for developers to port older applications easily without forcing the removal of some of the outstanding systems developed by NeXT. This means we'll get a rich assortment of software for OS X. Nearly all of the usual Mac OS developers will be able to move their software to the new system with ease, and a new pile of software originally developed for OpenStep and other Unix variants will also become available on Mac OS X.

Geekspeak: **BSD 4.4**

English: \bē-es-dē for-for\ n: An acronym for Berkeley Software Distribution 4.4, the latest version of the first nonproprietary Unix flavor.

THE CHANGE IN ARCHITECTURE

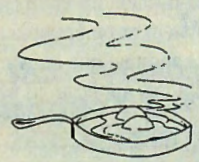
Mac OS X	Current Mac OS
BSD 4.4	CodeWarrior, good geek-toy shareware (such as IPNetMonitor), top Mac server programs (WebStar, NetPresenz, Eudora Internet Mail Server)

Geekspeak: **Unix**
English: \yü-niks\ n: A multiuser, multitasking operating system developed by Bell Labs in the late 1960s, largely used by university folks and server jockeys. Later, Unix split into many flavors, including BSD, SunOS, and Linux.

THE MAC OS X GEEK — ENGLISH DICTIONARY

Geekspeak: **shell**

English: \shel\ n: A text interface between users and the operating system in which users can enter powerful and arcane commands (such as a command that finds every occurrence of the word *lemur* in every document on the hard drive and dumps them into a new text document). The shell (or terminal) lets you read a text file, compile an application, or even delete the contents of a hard drive. Because this raw power lurks beneath the surface of Mac OS X, you won't ever have to use it unless you want to—Apple has promised to make everything possible in Mac OS X without making you "pop a shell."



egcs

Geekspeak: **EGCS**

English: \egs\ n: An acronym for Enhanced Gnu Compiler System. EGCS is the standard compiler both BSD and Mac OS X use to build Unix applications from easily downloadable source code.

WHAT ALL THIS MEANS The BSD 4.4 Unix layer in Mac OS X means happy developers, lots and lots of geek toys, world-class server applications, and unlimited cosmic power for power users.

WHY YOU SHOULD CARE Don't let all the tech talk put you off—having a version of Unix hanging out under Mac OS X's hood is a very good thing. Even if you don't plan on getting your hands dirty in BSD, you'll benefit. Here's how.

- **Happy Developers** BSD 4.4 (and its compiler system, EGCS) will make Mac OS X a fantastic developer platform. As part of their education, most developers learn how to program using the BSD flavor of Unix, which means a large number of people who might never have considered coding for the Mac OS before can write applications for Mac OS X via its BSD layer. Add to this BSD's mature development tools, such as EGCS, and you have a dream come true for anyone who wants to write Mac OS X applications.
- **Tons of Software** Thanks to the killer programming tools built for BSD, Mac OS X users will be able to do what Linux and BSD users have been doing for years—download and use the *tons* of powerful programs already available for BSD Unix. These are mostly power-user tools, such as server applications and scientific programs, but they include lots of interesting stuff, such as streaming MP3 servers, Web servers, and the like. Another benefit to having these built-in application creation tools: Developers can build programs from BSD source code they download from various archives—and often it requires very little tweaking. This should give us access to many of the specific-purpose applications (servers, numerical applications, and so on) that we've never seen on the Mac before—which should officially silence those Mac foes who use the absence of such applications as an argument against our platform.
- **World-Class Server Applications** BSD Unix is widely used in Internet servers, which means that the best server applications (such as the kick-butt Web server Apache and the cool Icecast MP3 streamer) already run on BSD. With a tiny bit of tinkering (most likely at the hands of the enthusiastic college students who compose a good part of the Mac shareware contingent), almost all of these applications will run in OS X's BSD layer, making the Mac a killer system for serving Web pages, FTP sites, streaming audio—you name it.

Geekspeak: Quartz

English: \kworts\ n: An advanced 2D graphics display system based on Adobe's PDF technology.

THE CHANGE IN ARCHITECTURE

Mac OS X	Current Mac OS
Quartz	QuickDraw

Geekspeak: **PDF**

English: \pē-dē-ef\ n: An acronym for Portable Document Format. Adobe developed this technology to make electronic documents look exactly the same on all systems. Quartz uses PDF technology for its display.

WHAT ALL THIS MEANS Mac OS X will have kick-ass graphics (including great graphics effects) built in. Mac OS X–native applications will have the ability to save documents as PDFs for free.

WHY YOU SHOULD CARE Quartz is the window between Mac OS X and you. It handles the drawing of every single pixel you see, from the lowliest window to the high-tech application dock. Quartz also makes the Aqua interface possible. It's the engine behind the spiffy drop shadows, translucent menus, and every other graphic trick Aqua has to offer. Also wrapped up in Mac OS X's graphics layer is OpenGL (the killer 3D technology that powers the latest games and 3D modeling software) and QuickTime. In fact, these two technologies are so tightly integrated that QuickTime image, movie, and audio file previews show up inside Mac OS X browser windows.

By moving to the PDF-based Quartz from the antiquated QuickDraw graphics system, Apple can offer some free whiz-bang graphics effects, such as transparency, drop shadows, antialiased vector images, and painless production of PDF files, to all applications. Also, you can easily map these PDF documents onto OpenGL objects. This is especially important for the graphics crowd, which can now create spectacular graphics documents and save them as PDFs, an increasingly important format in the prepress world. Oh, and Apple doesn't have to pay licensing fees for PDF as it does for PostScript, so the company can charge less for the system than for the PostScript-based Mac OS X Server (which costs $499).

Geekspeak: Classic

English: \kla-sik\ n: A virtual machine environment running an older version of Mac OS. Shims into Mach have replaced the current Mac OS hardware drivers.

THE CHANGE IN ARCHITECTURE

Mac OS X	Current Mac OS
The Classic environment	Virtual PC, if there was a version that emulated a Mac

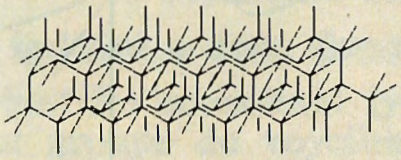
Geekspeak: **shim**

English: \shim\ n: A piece of code that looks like a hardware driver to higher-level software but passes the data it receives to some other device (often something quite different). A well-known example is the shim in Mac OS ROMs that makes the current USB keyboards look like ADB keyboards to the Mac OS startup sequence, thus allowing you to use startup key combinations such as Command-Option-P-R to zap the PRAM.

THE MAC OS X GEEK — ENGLISH DICTIONARY

WHAT ALL THIS MEANS With the entire operating system completely overhauled, Apple has to provide a way for you to keep using your current software until you get a chance to buy apps written in Carbon or Cocoa (see "Carbon," and "Cocoa," this page). The company elected to emulate a Mac running OS 9 in software, thus letting you run existing code on your Mac—the process is similar to running Windows in Virtual PC, except that it's much faster and the program windows integrate nicely with Mac OS X windows. The upshot? The bulk of your existing software will run in the new environment (with the exception of some games and utility software, which typically try to touch the hardware directly—a no-no in a well-structured operating system). Unfortunately, all of the problems associated with the current Mac OS are still present in the Classic layer. For instance, you still need to set memory partitions, applications can still crash one another, and so on. The Classic layer can use the CPU without emulation or translation since it relies on the same processor as the rest of Mac OS X. Therefore, you won't see any real speed hit as you would with emulators like Connectix's Virtual PC (http://www.connectix.com), which has to translate instructions for Intel processors into instructions the PowerPC CPU can understand.

WHY YOU SHOULD CARE Classic lets you switch to Mac OS X gradually, much as the 680X0 emulation routines let Mac users buy early Power Macs without having to purchase entirely new software. The one caveat, and it's a doozy, is that you can't use third-party hardware drivers in the Classic layer. Since Classic runs on a virtual machine, it can't see the hardware directly.



carbon (diamond structure)

Geekspeak: **Carbon**

English: \kär-bən\ n: A collection of Application Programming Interface calls and shared libraries that lets applications written to the Carbon specification run in Classic Mac OS while getting all the benefits of Mac OS X.

THE CHANGE IN ARCHITECTURE

Mac OS X	Current Mac OS
Carbon	Macintosh Toolbox

Geekspeak: **Reentrant**

English: \rē-in-trant\ n: Programming code that can be invoked simultaneously multiple times without crashing or corrupting data. Vital for any modern operating system that needs to perform lots of tasks at the same time without stalling. (The current Mac OS isn't reentrant-capable—which is why a single sluggish Mac OS application can stall out *everything* else on the system.)

WHAT ALL THIS MEANS Mac OS developers don't have to rewrite their programs entirely to get them to run under Mac OS X, thanks to Carbon. Instead, they will have to rewrite only 10 to 20 percent of the code.

WHY YOU SHOULD CARE Carbon is the brilliant idea that will keep current Mac OS developers (such as Adobe, Macromedia, and Microsoft) happy. Because they only have to rewrite a small portion of each current application to make the apps Carbon-compliant (and Mac OS X–native), the major development houses are much more likely to make the changes and adopt this new operating system than if they had to rewrite the entire code. Carbon applications will be 100 percent PowerPC code and will run under earlier versions of Mac OS (versions 8.x and 9.x). They'll be more stable, more responsive, and able to grab more memory as needed without your having to lift a finger. They'll also take on all of Aqua's eye-candy characteristics. Expect to see a lot of Carbon in Mac OS X's early days.

Geekspeak: **Cocoa**

English: \kō-kō\ n: Collectively, the tools and interfaces (based on dynamic languages Objective-C and Java) that NeXT developed for graphical application development in its NextStep and OpenStep operating systems.

THE CHANGE IN ARCHITECTURE

Mac OS X	Current Mac OS
Cocoa	Higher-level Mac OS APIs, or a framework such as Metrowerks PowerPlant

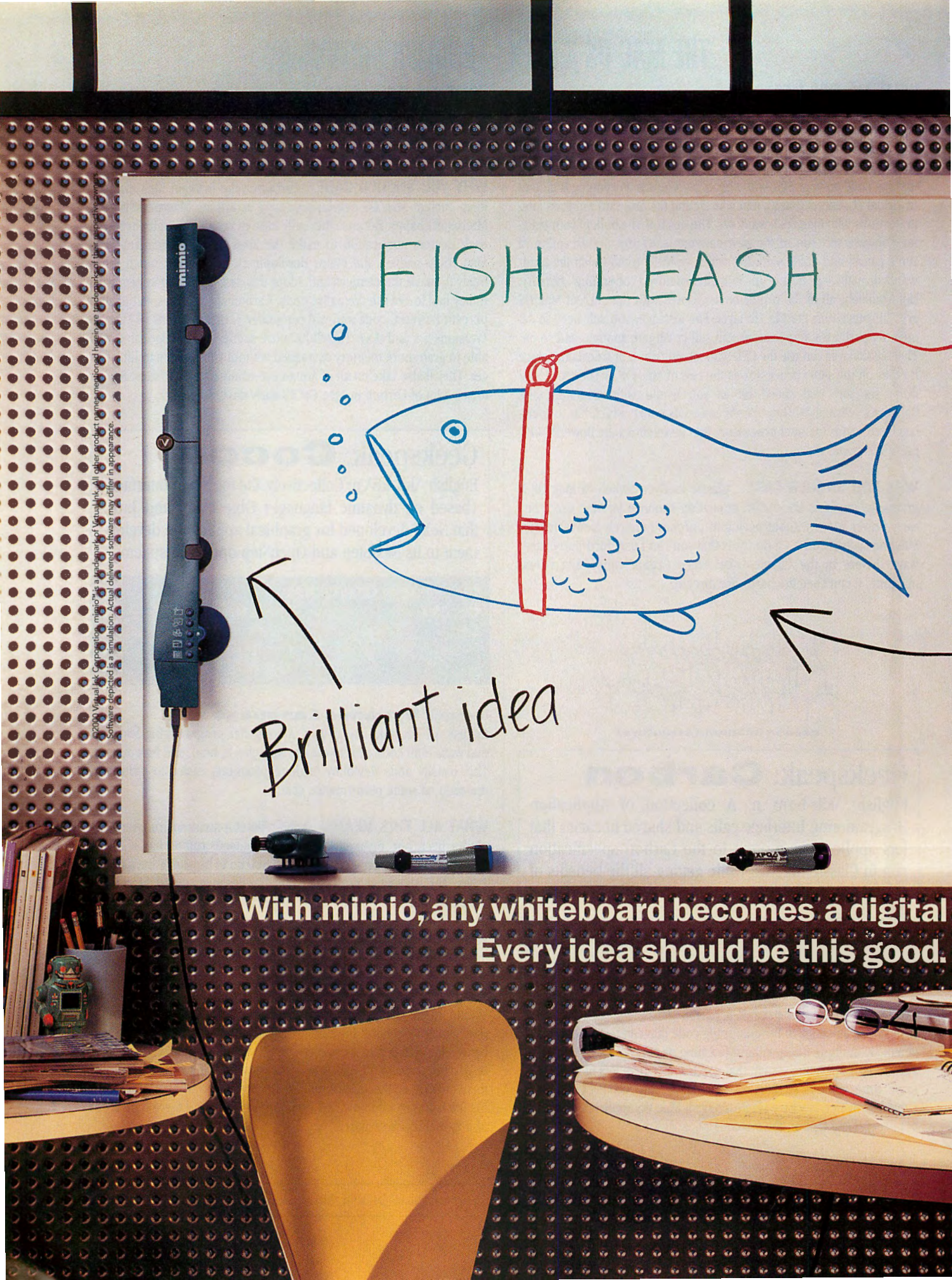
Geekspeak: **Dynamic Language**

English: \di-na-mik lang-gwij\ n: A computer programming language that waits until code runs to create, type-check, bind, and link objects. This usually adds flexibility, making programs easier to write and maintain, at some performance cost.

WHAT ALL THIS MEANS NeXT's development environment has always been one of its strong points—indeed, rumor has it that a demonstration of Cocoa convinced Gil Amelio to buy NeXT back in late 1996. This should make application development under Mac OS X both easy and entertaining for developers.

WHY YOU SHOULD CARE If the last decade has taught us anything, it's that the one resource Apple simply cannot do without is the strong base of amateur and semiprofessional developers responsible for creating the vast majority of Mac shareware in existence. Cocoa should make these folks *very* happy—it lets a relative beginner quickly create a fairly impressive application. This means more and better shareware than we've ever seen before. Unlike the lower-level BSD layer, Cocoa is designed to work with the full graphical environment of OS X, so the applications written for Cocoa will closely resemble the software we know and love on the Mac—and there'll be more of it available. *Much* more.

Ian Sammis and David Reynolds are already drooling over Mac OS XI's direct neural interface.



With mimio, any whiteboard becomes a digital
Every idea should be this good.

©2000 Virtual Ink Corporation. mimio™ is a trademark of Virtual Ink. All other product names mentioned herein are trademarks of their respective owners.
Software depicted is a simulation. Actual delivered software may differ in appearance.



whiteboard.

If you've ever missed information or lost a great idea written on a whiteboard, then you need a mimio™. Whether you're leading the meeting or transcribing the notes, mimio will truly amaze you. Attach mimio to any whiteboard and it captures everything you write or draw in color and transfers it to your Mac in real time. Print, fax, e-mail, drag and drop it into any Mac application, or send notes across the Internet. With mimio, you can collaborate and share ideas easily, accurately and instantly. And another amazing thing: mimio is only $599 complete. Don't wait. Get one for your next meeting.

Be amazed.

See the new mimio for Mac at www.mimio.com or call 1.877.696.4646 for a live demo.

mimio™

Think it. Share it.™



READ fuller versions of our interviews with the pros on the Web at http://www.macaddict.com.

A composer, a photo illustrator, a Web design guru, two audio entrepreneurs, a musician, a poster artist, a Hollywood effects specialist, and a font designer. No, that's not the name of ABC's newest sitcom; it's a list of the people we spent the last few months badgering for information—about their careers, their vision, and their Macs—to pass along to you. Among them is the man who brought the San Francisco Symphony and Metallica together; a former art director for *Rolling Stone* and the *New York Times*; the guy who makes the girls inside *Maxim* look inhumanly beautiful; and a man who built a Star Destroyer's docking bay in *Star Wars* by hand. These are the people behind the magic, and we've got the magic behind the people.

Each of our Magnificent... um, Nine is at the peak of his respective industry, and each owes the Mac a certain amount of gratitude for helping him get there. The computer of choice for creative professionals is an amazing tool in the hands of someone with talent and vision, so read on for insight, inspiration, or just to get some really cool tricks from the ultimate Mac pros.

Secrets of the Pros

by Cathy Lu and Robert Capps

photography by Rafael Fuchs

TABLE OF CONTENTS

page 38 **ROGER BLACK**, Web and print design guru

page 40 **THOMAS DOLBY ROBERTSON AND JOSH GABRIEL**, music and sound innovators

page 42 **ANDREW COPPA**, photo illustrator and retoucher

page 46 **MICHAEL KAMEN**, film score composer

page 48 **FRANK KOZIK**, poster artist

page 51 **CHANK DIESEL**, font designer

page 54 **MOBY**, musician

page 56 **ERIC CHAUVIN**, special effects wiz

Black & White & Red All Over



FIND ADOBE ILLUSTRATOR 8.0 and Photoshop 5.5 tryouts, iView Multimedia 3.8, Drop Rename 3.5, a Snapz Pro 2 trial, and a PDF version of *Web Sites That Work* on The Disc.

Roger Black

print designer, Web guru, creative director of Circle.com

MAC: PowerBook G3 (FireWire)
APPS OF THE TRADE: Adobe Illustrator and Photoshop (http://www.adobe.com), QuarkXPress (http://www.quark.com), Netscape Calendar (http://www.netscape.com)
CLAIM TO FAME: Art director for *Rolling Stone*, the *New York Times*, and *Newsweek;* redesigned *Men's Health*, the *New Republic*, and the *San Francisco Examiner;* designed MSNBC.com, HBO.com, Newsweek.com, and Barnesandnoble.com

Roger Black jokes that he became an art director because in the early 1970s no one told him he wasn't one. We'd say he's in the clear—nobody is going to tell him he isn't one now. The prolific Black has played art director at some of the biggest publications in the world, including *Rolling Stone* and the *New York Times*. He has worked as a redesign gun-for-hire at other magazines and papers such as the *Los Angeles Times* and *Fast Company*. In the 1990s he brought his sizable reputation and finely honed design skills to bear on the World Wide Web, setting the look for several prominent sites and releasing the book *Web Sites That Work* (Adobe Press, 1997). He has founded multiple design-related companies, two of which (Roger Black Inc. and Interactive Bureau) officially merged last year into Circle.com, a worldwide media company offering a complete range of Internet services. Black is currently the creative director of Circle .com. Black, who first ventured into publishing as an editor at a student magazine, focuses his design style on simplicity, ease of use, and editorial functionality. Among his top design rules in *Web Sites That Work* are "Make everything as big as possible" and "The first color is white, the second color is black, and the third color is red." He avoids overloading readers, and he always puts content first. Convergence is a word Black uses often, implying the interconnected nature of content, design, marketing, focus, and engineering in a Web site. Though he's convinced the Web still hasn't found its way out of the dark ages, he's optimistic for the future.

Q&A with Roger Black

***MacAddict:* What are the different challenges of designing a magazine and designing a newspaper?**

Roger Black: Newspapers are much more [about] designing a system. You don't really have that much hands-on detail control. You have to set up a number of methods or formats or techniques for putting out the pages in a hurry. That's very similar to Web sites. What we're designing is not a page; we're designing a system so people can make a Web site that looks like it was designed. Newspaper work is pretty close to that, intellectually.

***MacAddict:* What's different in magazine work?**

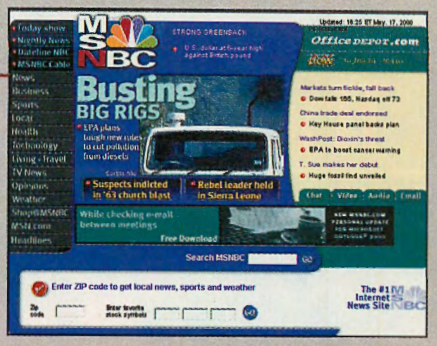
Roger Black: Magazine work is...an *art director's* job. Newspapers are a *designer's* job. At a magazine, if it's well done...you're ordering or creating or editing the art in the publication, the illustrations, and the photography. People became very design-oriented in the '70s and '80s, and many magazines now are not very well art-directed, but they're beautifully designed. It's as though they forget about the pictures. It's weird. Where I came from...the art directors were art editors. They helped develop or assign or choose the pictures. And that's kind of a lost art.

MacAddict: What made you want to design for the screen?
Roger Black: I think the transition had to do with already working on the screen. Once we got into desktop publishing, you really were imaging all of your stuff on a screen. Very often the scan looked better or the type with the very white background looked better than it did when it was printed....It had its own design artifact quality—so why not just give people that?

Also I, like many designers, have a certain wish that [I] had gotten into movies—editing sound or animation [or] photography...why not...design with that?...I was at a Seybold conference six years ago in Boston, and John Gage from Sun was showing Mosaic....He was showing "The Web" with some live copy and some...pictures. And it was like, "Whoa!". I'm [also] interested in the media aspects [of the Web]—liveness, getting things out there....The Web...[is] instant. You just put it out there, and it's done.

MacAddict: As you made the transition to the Web, did you ever find yourself frustrated at all? In print you can run big photos. And on the Web...
Roger Black: Photos are horrible, yeah. In this stage of development the Internet is for transactions—whether for sales or for information. One-way media—broadcasting or publishing—is for storytelling. It may be that we ultimately get storytelling to work [on the Net] somehow, but at that point it would be a convergence situation. You're getting video on demand or whatever, but you're still in a passive mode....But the Web metaphor is really transactions....People want to find something out. They go there, they get it, they get out. And that's a wonderful thing. It's an amazing thing.

MacAddict: What's your opinion of the design of most Web sites out there right now?
Roger Black: I think they're all pretty horrible. But then again, most of them are trapped in Windows. That, I think, is a disastrous thing for them. Most people cringe like a stray dog [does] when you [lunge] at it—that's the basic human reaction to Windows. You open up the PC and you have the same cringe as the cowardly dog because it's such a horrible thing. Even if you accept it, it reminds you of homework, it reminds you of work.



ONE OF ROGER BLACK'S biggest Web endeavors was the look he gave the MSNBC.com site.

MacAddict: Why do you think that is?
Roger Black: It's the ghastly interface design, followed by the Microsoft hegemony coming through in the design....If you take Windows and then put [Internet Explorer] inside it, and then you get your Web site, you're already lost in most cases. There are a lot of other frustrations [as well]. You have no control over typography, so the type is almost illegible. Yammering clients want to put more stuff on every page. So they resolve that by making the type so small only eight-year-olds can read it....I think we have a long, long way to go.

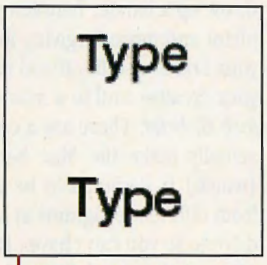
MacAddict: What are some design faux pas on the Web?
Roger Black: I've already mentioned my number one pet peeve, which is the tininess of all the type....The second one [is that] nobody edits. There are a hundred things on every page. They put the banner ads on, and they all start twinkling at you—[it] drives you out of your mind. There is a kind of moronic sameness about all Web sites. Why is that? Why do they all look exactly alike now? I call it Yahoo-ization.

MacAddict: What advice would you give to a print designer who's stepping onto the Web?
Roger Black: I think the main thing is pretty much to work as you would in print design. A good designer always focuses on the reader or the customer, the viewer, whatever the end user is....I do not believe the technological hurdles are that big....Most of the stuff we do on the Web is not particularly difficult. Almost anybody, particularly anybody under 30 growing up in our society, has enough technological culture to work with it. Don't get scared. It's not that big a deal.

Protect the Baseline

One of the biggest hurdles Roger Black and the design department at Circle.com have to tackle is making type sharp and readable on the Web. Circle.com was willing to share the following trick with us—always protect the baseline of type. If the baseline stays sharp, the text usually looks good as well. Here's how.

- Cutting and pasting from Adobe Illustrator is unpredictable—you often end up with muddled type. Remake type with Photoshop's type tool for GIFs and JPEGs.
- When making type in Photoshop, set your canvas to 100 percent magnification. If you zoom in or out, it can alter your type's baseline and make it fuzzy.
- Vary a type's point size and see if it looks any better—sometimes going up or down a single point will make a huge difference.
- Try sharpening your type with Photoshop's Unsharp Mask filter.



TYPE created in Illustrator (top) is just slightly fuzzier than type created in Photoshop (bottom).

Apropos Applications

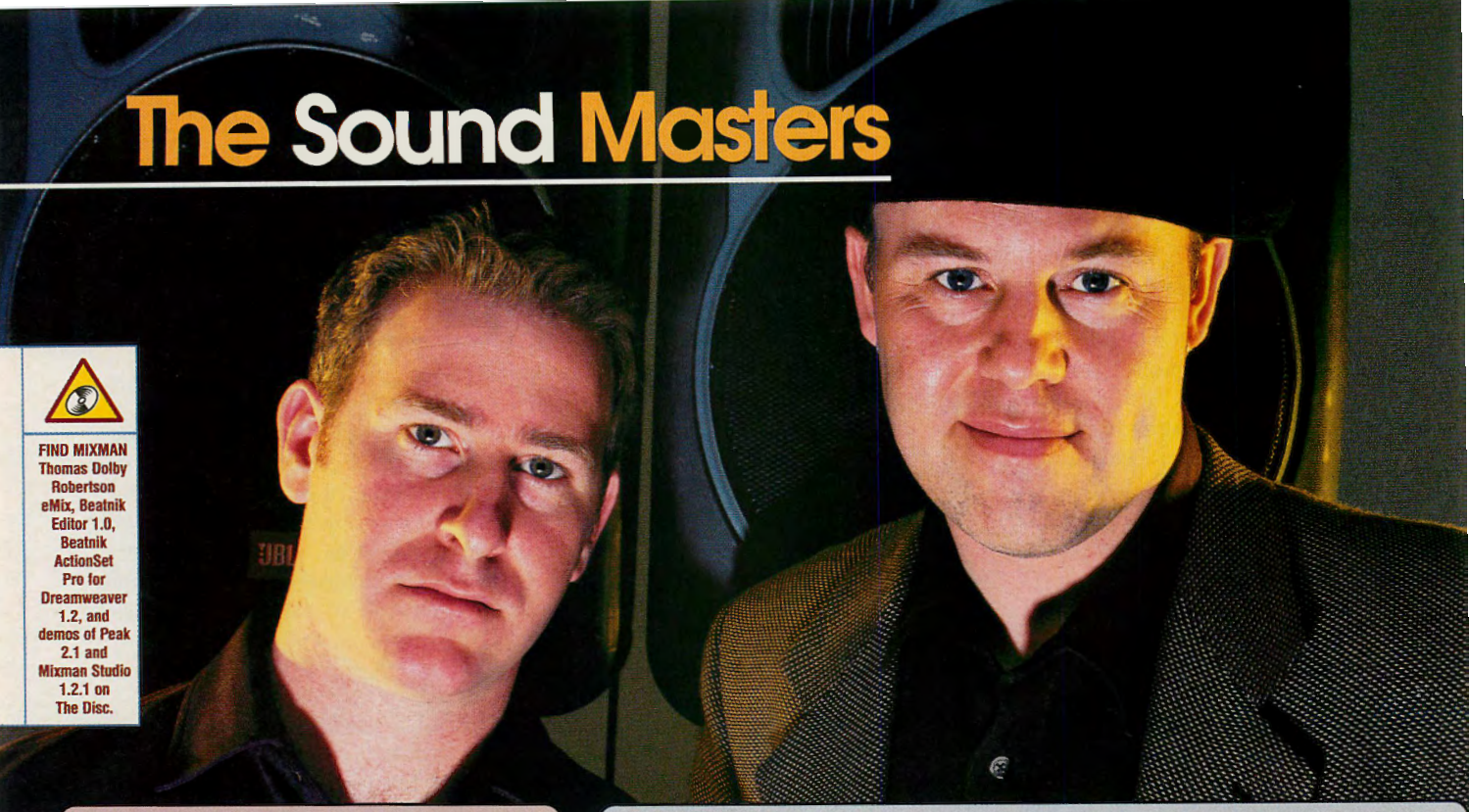
Roger Black's designers kindly shared with us some of the shareware apps they find indispensable.

iView Multimedia
(http://www.iview-multimedia.com)—A tool for making slide shows. It can also easily export a folder of images into an HTML slide show.

Snapz Pro
(http://www.AmbrosiaSW.com)—The premiere screen-shot app.

Drop Rename
(http://infomac.acornsw.com/infomac/_DISK_AND_FILE/DROP-RENAME-35 .HTML)—A utility for renaming batches of files. Makes changing groups of file names a snap.

The Sound Masters



FIND MIXMAN Thomas Dolby Robertson eMix, Beatnik Editor 1.0, Beatnik ActionSet Pro for Dreamweaver 1.2, and demos of Peak 2.1 and Mixman Studio 1.2.1 on The Disc.

Thomas Dolby Robertson (right)
musician, founder of Beatnik

Josh Gabriel (left)
musician, founder of Mixman

MACS: Dolby Robertson: G3 PowerBook and Quadra 950; Gabriel: G3 PowerBook
APPS OF THE TRADE: Dolby Robertson: Adobe Illustrator and Photoshop (http://www.adobe.com), BIAS Peak (http://www.bias-inc.com), Beatnik Editor (http://www.beatnik.com); Gabriel: Adobe Illustrator and Photoshop; Mixman (http://www.mixman.com), Emagic Logic (http://www.emagic.de)
CLAIM TO FAME: Dolby Robertson: Founded Beatnik, wrote and recorded "She Blinded Me with Science" and "Hyperactive!"; Gabriel: Founded Mixman, worked on sound effects and sound design for early Energizer Bunny commercials, worked on editing and mastering the *Aladdin* soundtrack

At first glance, it may not seem obvious why Thomas Dolby Robertson and Josh Gabriel are in business together. Dolby Robertson's company, Beatnik*, focuses on providing the tools to put sound on the Web sans download or buffering time. Gabriel's company, Mixman, is in the business of empowering musicians and nonmusicians alike with song-mixing tools. But take a look at their pasts—and where they believe music technology is headed in the future—and it starts to make sense why their two companies merged last December. Both Dolby Robertson and Gabriel have been involved in the music and technology revolution since the 1980s; both have been pushing the limits of their Macs from day one—Dolby Robertson on a Classic, Gabriel on a Plus. Now their collective goal is to help millions of people experience music and sound via the Internet. Witness what they call eMixes, a fusion of the two technologies (http://www.beatnik.com/groovegrams/index.html), which allow any average tone-deaf Jill or Joe to remix tracks like Smash Mouth's "All Star," even Thomas Dolby Robertson's own "She Blinded Me with Science." As both Dolby Robertson and Gabriel tell it, the Internet is the last entertainment or multimedia experience that lacks an edifying sound experience. Their goal? To change that forever.

Q&A with Thomas Dolby Robertson and Josh Gabriel

***MacAddict:* When did it become possible to do most of your music on Macs?**

Thomas Dolby Robertson: I got to a point probably by the early '90s where I had what was then a fairly hefty setup, with lots of additional cards in it—ProTools cards and SampleCell cards, and so on. It became possible in the MIDI sequencers to actually add tracks of audio. I can actually remember showing a version of Vision at a show in about '92 or '93 where, instead of having MIDI notes, I had all samples I'd gotten off CD sample collections. I had a sort of mosaic going on of different loops of samples. People were rather amazed that you could make up whole tracks this way.

***MacAddict:* Why do you use a Mac for your music?**

Thomas Dolby Robertson: It's hard to say a computer behaves like a person, but when you interact with a person creatively, every time you work with them you learn a little bit more about each other. It makes sense that as time goes on, it gets a little bit more intuitive—it gets a little bit easier to do stuff you've been doing all along. You just feel with a PC that when you're trying to pursue a creative thread, it just does everything it can to throw up a barrier between you and reaching your goal. The Mac is more pliant and more forgiving in a lot of ways. It's a better place to organize your creative stuff....If you're going to spend hours every day and entrust your creative soul to a machine, you'd rather it was a Mac.

Josh Gabriel: There are a couple of technical things we run into also that actually make the Mac better for music. One is the Sound Manager, [which] is designed to be able to play more than one stream of audio from different programs at a time....On a PC...one program has the audio drivers, so you can't have...ReBirth and Mixman and other programs running simultaneously through one audio output....The other thing for programs like Mixman, where you're storing large amounts of sound in RAM—it's silly, but on a PC it's a very tricky thing to actually lock memory....A Mac user will know, "Oh, if it's not running right, I may need to

*Disclosure: Imagine Media's CEO Chris Anderson has invested in Beatnik.

allocate more RAM to my program." On the PC side, you have no control over how much RAM is allocated to a program. The operating system handles that. As a result, things that need to be in RAM to run fast tend to be harder to do, so you get performance problems.

MacAddict: How will the Internet change music, and will the technology take something away from music or the process of creating music?

Thomas Dolby Robertson: What the Internet is bringing about is the best of [both] worlds, where you get the interaction and the audience participation of the town square, coupled with the global reach of a broadcast medium, in this case the Internet. So I really think that the 21st century is going to be more interactive, more participatory....Yes, it takes [something] away. You won't get a new John Lennon writing "Imagine" with a Mixman tool. On the other hand, you'll get new art forms. You get people like Beck and Moby and all these new types of composers. And it's important for music that it keeps moving on.

MacAddict: Do you have a vision of how music and technology will combine to become more interactive?

Thomas Dolby Robertson: I was actually looking the other day at a site...and there are kids in there trading samples in real time in chat rooms. There are people in there saying, "Anybody got a cool break beat at about 120 beats per minute that I can have?" "Sure, here's one. I ripped this off an old 45 that I found in my dad's record collection." There's all this stuff going on in real time—people uploading and downloading mixes, and saying, "Oh, you live in Reading, I live in Reading, let's meet down at the Crown and Thistle and trade some floppy disks."

MacAddict: What does Beatnik allow people to do that they couldn't do before?

Thomas Dolby Robertson: Well, Beatnik has sort of cracked the secret formula of allowing high-quality sound without adding enormously to the download time. The way we've done that is kind of like what Flash did for graphics....Instead of making a movie, compressing it, and sending it over the phone line, you...send a set of instructions. Multimedia is a kind of a wedding cake, and you can't really send that over a phone line. But you can send the recipe so long as there's flour and eggs and water at the other end.

MacAddict: What do you consider rules of good sound design?

Josh Gabriel: Sound needs to *add* to the experience, not take away from the experience....[A] classic example is "You've got mail." This is something that's not about music. It's about telling somebody that something happened.

Thomas Dolby Robertson: [The sound] shouldn't stop and start a file....You shouldn't get short, irritating loops that just don't vary and keep playing ad infinitum every time you go back. You should vary that over time. You should have sounds blend together as you move from one arm into another. You shouldn't get cacophony in terms of multiple musical notes all being thrown together. They should be really blended from that point of view. They should help set the tone and the atmosphere of a site without necessarily manipulating how you feel about it.

Josh Gabriel: It's like good film music....You might not even remember what the music was, but if you saw the movie without the music, you wouldn't have experienced it in the same way.

Sonifying MacAddict.com

We asked Thomas Dolby Robertson for tips on sonifying the MacAddict.com Web site with Beatnik software. Here's what he suggested.

A five-to-eight-second jingle that includes the name "MacAddict" every day a user comes back to the site. Dolby Robertson suggests "a growly-voiced actor who says, 'MacAddict'...a Tom Waits character or something like that with maybe a little piece of music behind it as well." To ensure that the voice doesn't play over and over again as users navigate the site, try setting a cookie.

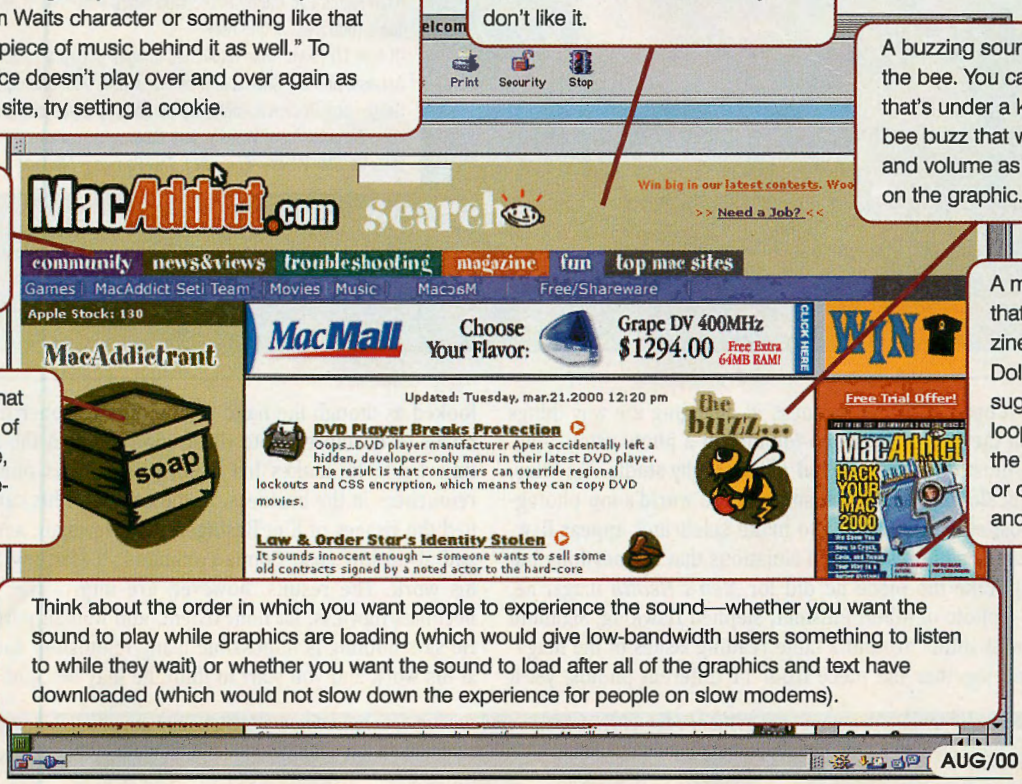
Include a Sound On/Sound Off button that allows people to turn off the sound on the site if they don't like it.

A buzzing sound as you roll over the bee. You can use a sample that's under a kilobyte to create a bee buzz that would vary in pitch and volume as you move around on the graphic.

Little clicks and pops that sound as you roll over different options.

A mechanical sound that matches the magazine's cover graphic. Dolby Robertson suggests a little sound loop of dismembering the innards of a clock or of cuckoos, bells, and springs.

A squishy sound that evokes the feeling of soap—for instance, the sound of somebody lathering up.



Think about the order in which you want people to experience the sound—whether you want the sound to play while graphics are loading (which would give low-bandwidth users something to listen to while they wait) or whether you want the sound to load after all of the graphics and text have downloaded (which would not slow down the experience for people on slow modems).

Digital Magician



FIND TRYOUTS of Adobe Illustrator 8.0, Photoshop 5.5, and Streamline 4.0, and Jenmo Before and After tutorial files on The Disc.

Andrew Coppa

photo retoucher, photo illustrator

MACS: Three blue-and-white G3s

APPS OF THE TRADE: Adobe Photoshop, Illustrator, and Streamline (http://www.adobe.com); MetaCreations Infini-D and Painter (http://www.metacreations.com); NewTek LightWave (http://www.newtek.com); Alien Skin's Eye Candy Photoshop filters (http://www.alienskin.com); Kai's Power Tools (http://www.kpt5.net)

CLAIM TO FAME: Has retouched images of Lauryn Hill, 98 Degrees, Jennifer Aniston, and the Chemical Brothers; works with photographers including Mark Seliger and Roderick Angle; works on magazines including *Maxim*, *George*, *New York*, *Entertainment Weekly*, and *Biography*; collaborated with ILM on publicity stills for *Star Wars—Episode I: The Phantom Menace*

Andrew Coppa is in the business of changing the way things look in the world. As the co-founder of a photo retouching, photo illustration, and digital photography studio, Vis Vitae, in New York City, Coppa works with some of the world's top photographers and most elite publications to make celebrities appear flawless and to create seamless images of situations that are anything but based in reality. Take the piece he did for *Men's Health* magazine, which featured a photo of Albert Einstein, Stephen Hawking, Sigmund Freud, and Gandhi sitting around a table reading issues of the magazine. He stitched together the piece from 11 different photos, yet it looked as though the hand of one photographer had taken it. Coppa hopes to do more photo illustration work in the future, but for the time being he makes his living primarily as one of the top photo retouchers in the business. In the course of his career he has beautified the visages of Kim Basinger, Paul Newman, and Nicholas Cage—and at no low cost: Coppa commands a startling $300 per hour for his work. The results, however, are impressive: By his hand, skin becomes flawless, fat nonexistent, and human perfection a standard. He says nothing is impossible using Photoshop and a Mac. One look at his work and you start to think he may be right.

Q&A with Andrew Coppa

***MacAddict:* A lot of people think photography is just about taking a picture. What percentage of it is taking a picture and what percentage of it is working with the picture after taking it?**

Andrew Coppa: Well, there are still a lot of purists....Some photographers [are] so pure that if there's a piece of paper on the floor, they don't want to move it. The other extreme would be me....It's all clay to me, and whatever I need to do to get what I want, it doesn't matter. There are no parameters.

***MacAddict:* What are some of the main things that can go wrong with a photo?**

Andrew Coppa: The first thing would be the crop, which seems like a simple, easy thing. But a good crop makes a major change instantly.

***MacAddict:* How do you deal with red-eye?**

Andrew Coppa: Basically the cause of red-eye is that [light is] bouncing off the retina, and you're seeing the blood vessels behind it....The best way to get rid of it is to select the area and make a separate curve just for the red-eye—just...go in with the selection tool, select each pupil, save the selection, and then make a curve. Basically you're adding cyan, you're adding some blue. You're just going to play with it, depending on the color of the person's eyes and the degree of red-eye.

***MacAddict:* What are other common retouches?**

Andrew Coppa: Zits and even just blemishes. [Many times] people have good skin, it's just the way the light's hitting them. [So with] any kind of unsavory shadows or marks, you just go in with a very small brush on a separate layer. The way I like to structure things [is to] have the image on the back layer. Any work I do is always on a separate layer. This way I can always go back and forth. [I] never do [retouching] on the [base] image. That way I can always see what I'm doing and go back, and everything's very organized and neat....So to [fix blemishes] you just basically have to put your stamping tool on and use all layers. Because if you don't click that, it will just clone what's on that layer....Skin also depends on what the purpose of the picture is. Is it a beauty picture, [or] is it about the realism of the person? In my profession, obviously, I'm trying to beautify people as much as possible...so I'm reducing things, I'm stretching people, I'm bringing in stomachs....It doesn't matter how perfect or beautiful somebody is—for that extra edge they're always enhanced in some way, shape, or form.

***MacAddict:* So for, say, a *Men's Health* fashion shoot, you might be cutting fat off somebody's body?**

Andrew Coppa: Oh, absolutely....Naturally you have some fat, so unless you are in the most perfect position, there's always something that's less than perfect....And of course body hair is major...any kind of stubble, razor burns around bikinis, that's big.

***MacAddict:* What are some common retouching mistakes?**

Andrew Coppa: A big retouching mistake that people make is masking—dropping in a background and not perfectly placing edges where they meet. Let's say you have a picture of me, and then you want to put a sky scene behind me. Even if the lighting looks right—the way the edges of my skin or my fingers go into the background, if there's some kind of a line around it, or [if] you see something's weird with the focus, that's one of the biggest [giveaways]. Something could be blurry versus very hard, [which makes it look like] something's not right.

***MacAddict:* How do you fix that?**

Andrew Coppa: The way to remedy it is to go in and really get the proper brush for what you're doing. If it's a hard surface, you've got to go with the very small hard brush. If it's a blurry surface, you have to keep experimenting with brushes till you get just a right amount of featheredness to it so that [everything] meshes properly.

***MacAddict:* What are some Photoshop filters you use?**

Andrew Coppa: The KPT [Kai's Power Tools] filters are great. Eye Candy is very good. There's fire, bubbles, different distortion tools, fur....And then a lot of the Photoshop stuff, too, just for mixing and matching. The distortion filters, the lighting filter's great, the 3D filter's great....In Painter...I'll use filters. Painter has its own proprietary filters, so I will actually bring an image into Painter just to use some of the filters and then export it out.

***MacAddict:* How much RAM do you allocate to Photoshop?**

Andrew Coppa: Usually around 600 megs.

***MacAddict:* Do you have any little-known tips you can offer?**

Andrew Coppa: Using curves to retouch...instead of doing dodge and burn....You just have more control over it, and you can keep going back and forth....When you use dodge and burn, you have to make a copy of that layer and then dodge and burn it if you want to keep elements separate. If you retouch it with a curve, you don't have to copy any of that layer. You can just selectively place things where you want. It keeps the file size down dramatically, and it helps keep things organized. The beauty of this [method] is that you can constantly go in there and change things.

***MacAddict:* Do you ever have reservations about making all these people look inhumanly beautiful?**

Andrew Coppa: There's always a thing about young girls being anorexic and guys taking testosterone...to bulk up. I don't know if it's right or wrong, but I just don't have any problem with it. It's just an image that's portrayed....If you're a sound person, if you're a healthy person, seeing somebody who looks like a stick isn't going to really affect you—and it shouldn't.



NOT PORNOGRAPHY, ART. Coppa's photo illustration (which the artist made PG for *MacAddict*) represents two different approaches to the same situation.

The Anatomy of a Retouch

Everybody at *MacAddict* believes that Managing Editor Jenifer Morgan (aka Jenmo) is naturally beautiful. But back her up against a stark white office wall under the harsh gaze of fluorescent lights, then take her picture with an average point-and-shoot camera, and nobody—not even Jenmo—looks her best (she looked better than anyone else, though, so we chose her as our guinea pig). We asked our expert retoucher, Andrew Coppa, to give Jenmo's picture the full celebrity treatment, and show us, step by step, how he approached the photo and accomplished each effect. Here we share his photo-retouching secrets in explicit detail.





CAN YOU SPOT the differences between these photos?

1 Dust

Create a layer just for dust and remove any dirt marks from the background using the rubber stamp tool (make sure to check the Use All Layers box in your Rubber Stamp palette). Make a duplicate of the file and then save the doctored one under a different name. Flatten the dust layer into the background layer when you're satisfied with your work. Remember to save a *new* file after each step and to save the initial scan, so you can always go back a step without having to start over. You especially want to avoid having to scan an image more than once, especially when it's at a high resolution. Also, create a new layer for *everything* you do.



FIRST THINGS FIRST: The initial layer is for removing dust and dirt marks.

2 Hard Retouching

Create a hard retouching layer. Here you remove any major marks and blemishes, as well as cut off the stray strands of hair, which, according to Coppa, are unnecessary and do not add to the photo. For hard retouching, Coppa recommends using the stamp tool and a small brush (with a hardness of 100) on a layer set to 100 percent opacity. From there, it's a matter of trial and error and testing out spots from other parts of the photo to eliminate blemishes and marks.





ONE OF THE FIRST STEPS was to give Jenmo a haircut.





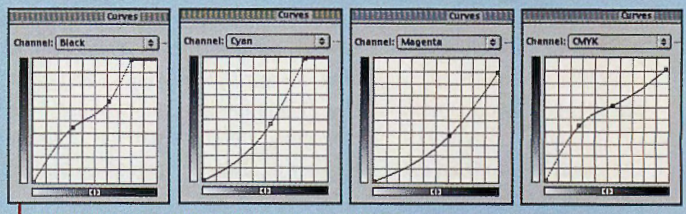
HERE'S ONE PLACE WHERE hard retouching really comes in useful. To remove the reflection in the eye, simply take a sample of the iris using the stamp tool, then brush over the spot using the small brush.

3 Red-Eye

Coppa suggests eliminating red-eye by playing with curves (a method for adjusting the amount of each color in a selected area). Create a red-eye layer and select the pupil area. From the Image menu, select Adjust, then Curves. Start adjusting the different curves until the eye color looks natural.



RED EYE plagues most amateur photography, but curves can usually solve that problem.



THE WAY YOU MOVE THE CURVES DEPENDS, obviously, on the subject's eye color. According to Coppa, it's a matter of trial and error and knowing which color pairings work together (red and cyan, blue and yellow, green and magenta).

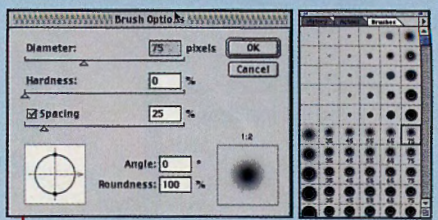
4 Soft Retouching

In this step, you'll use the same technique as in the hard retouching layer, except you'll employ a larger, more feathered brush and deal with bigger areas of skin. Soft retouching creates a softer, more blurred look and evens out skin tones. Before you start working, make sure you're creating each element in the soft retouching layer on a separate layer (in case you're happy with one change you've made but don't like another). Then collapse the layers into one soft retouching layer when the overall result satisfies you.

Use a feathered brush and, employing the same stamp and brush technique as in hard retouching, start softening up some of the different areas of the face. Here, Coppa used a 75-pixel brush with spacing of 25 and 0 hardness (as opposed to 100 percent hardness for hard retouching). To make things easier, Photoshop experts like Coppa make an entire palette of custom brushes to accomplish different effects. Finally, change the opacity of this layer to between 30 and 50 percent (otherwise the layer will make the photo look a bit pixilated). Also, set the noise to around 8 (using the Noise filter) to add texture—otherwise the spots you've retouched will stand out and look fake.



SOFT RETOUCHING is a great way to even skin tones and smooth out large areas of skin.



A PALETTE OF large, feathered brushes is particularly useful for soft retouching.

5 Centering the Necklace

In this step you'll move the necklace from under the shirt to the center of the neck. This is especially tricky because a piece of the necklace disappears under the shirt, so you need to reconstruct that corner of the jewelry. Even though you're working on one feature, make sure you do each of the steps on different layers and then merge them at the end so you don't have to start from scratch again if you mess up.

On a new layer, use the lasso tool to make a selection around the piece you want to move. Go to the Edit menu and select Copy Merged, which will copy information from all of the layers (as opposed to just the layer in which you're working). Select Paste from the Edit menu and move the piece you've pasted in line with the other side of the necklace. Next, put a mask on the piece you copied and, using a medium-size brush, mask out pieces such as parts of the shirt. When you do this, make sure you're on the layer on which you want to place the mask. Under Layer, select Add Layer Mask, then Reveal All. Click the mask in the Layer palette (the empty box next to the chain link), then grab a paintbrush, turn the color to black (by clicking the arrows where the white and black boxes sit in the Tools palette), and start painting. This should make the items you're painting disappear from view. Either now or at the end of this step, use hard retouch to get rid of the second chain, as well as the rest of the shirt and the original necklace. Then, do some soft retouching to make sure the skin tones look correct.

You also need to reproduce the missing corner of the necklace. On a new layer, select a section from the side of the pendant that is complete, then select Copy Merged. Paste it, flip it 180 degrees, and move it to the part of the pendant that's missing. To flip the piece, press Command-T, then hold down the Control key and click the image—a menu appears with various options, including Rotate 180 Degrees, which you'll choose. To fill in the rest of the missing pieces, make a selection around the top of the necklace and follow the same procedure you used to fill in the bottom part of the pendant. You can employ this method to fill in the rest of the chain as well. Just keep grabbing and altering pieces to fill the area, then make a new layer on top and use your stamp tool to fix problems such as chain pieces that don't align perfectly.



CENTERING the necklace makes for a nicer-looking picture.



MOVING THE NECKLACE involves cutting and pasting the section you want to move, then using the Masking tool to remove unwanted pieces.



NOW THAT YOU'VE MOVED the necklace, you need to cut and paste pieces from one side of the pendant to fill in what's missing.

6 Changing the Nose

Create a new layer for the nose and remember to make sublayers for all the different changes you'll be making. The first step involves adjusting the curves ever so slightly to take a little redness out of the nose.

The next step is a bit more complex. Resizing the nose—or any feature of the face—involves the Transform command. On a new layer, make a selection around the nose, including some of the area near it. Do a Copy Merged, paste it, and transform it by pressing Command-T, pressing Control, and scaling the size of the box. Hold down the Shift key while you change the size of the box so that the nose will scale up and down proportionately. Finally, do some retouching so that the new nose fits in with the face, and then lighten it one more time using the soft retouching technique.



OUR DIGITAL NOSE JOB involves first taking out a bit of red using curves, then shrinking it in size.



THE TRANSFORM COMMAND (Command-T) lets you resize the selected feature.

7 Blurring the Skin

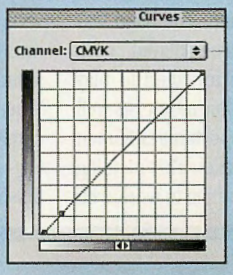
Because our film was a bit grainy, we'll put a final blur on the face to get rid of some of the pixilated qualities of the photo. Create a new layer for the blur, select the whole face, and Copy Merge it. Blur the face using a .6 Gaussian blur (go to the Filter menu and select Blur, then Gaussian blur) and add a noise level between 8 and 11. Coppa recommends masking out the eyes to restore them to their sharper state—people tend to look at eyes first and will notice when they are out of focus.



PUTTING A SLIGHT Gaussian blur on the face, then masking out the eyes eliminates some of the pixilated components of the photo.

8 Adjusting Curves

The final step in the transformation of Jenmo is to adjust the curves, adding warmth to the skin tones. To do this, pull up the Curves window and start playing with the colors. Coppa suggests taking down the cyan, adding a little magenta to cut some of the green, and adding a little bit of yellow for warmth. Voilà—it's a whole new Jenmo.





THE FINISHING TOUCHES involve one final adjustment of the curves.

The Minstrel



Michael Kamen

composer, rock-and-roll oboist

MACS: Two G4s with Apple Cinema Displays (one for the home in Los Angeles, one for the home in London), G3 PowerBook
APPS OF THE TRADE: Mark of the Unicorn's Digital Performer (http://www.motu.com)
CLAIM TO FAME: Wrote scores for the *Die Hard* and *Lethal Weapon* trilogies, *Brazil*, *Robin Hood: Prince of Thieves* (including the hit "(Everything I Do) I Do for You"), and *Pink Floyd: The Wall;* just finished the *X-Men* movie soundtrack; won three Grammy awards; wrote scores to Metallica songs for the San Francisco Symphony Orchestra to perform live (with Metallica)

Classically trained as an oboe player at the esteemed Juilliard School, Michael Kamen ironically got his first big orchestral break while he was playing in a rock band. The band was called the New York Rock and Roll Ensemble, and Kamen played...well, the oboe. Its genre-bending style got the band an invitation to play along with Leonard Bernstein and the New York Philharmonic, as well as David Zinman and the Baltimore Orchestra—opportunities Kamen insists he never would have had as a classical musician. This melding of classical and rock music has continued to allow Kamen to work with some of the biggest names on both sides of the musical line—Pink Floyd, Luciano Pavarotti, and Eric Clapton, to name a few. The most recent example of this blend occurred when he orchestrally scored the music of Metallica for the San Francisco Symphony, resulting in the hit album *S&M.* Kamen's day job, however, is writing scores for movies. When we visited him, he was working on the music for Bryan Singer's comic book-based *X-Men.* It's a process he starts on his high-powered G4—composing in the sequencing program Digital Performer—and finishes with a live orchestra.

Q&A with Michael Kamen

MacAddict: What instruments do you play?
Michael Kamen: I play a little guitar, I play a little bass, I play piano, [but my] main instrument...is [the] oboe. I studied oboe from the time I was about 12 and connected with it....I went to a music and art high school, and wanted to be a composer, but I realized early on [that it wasn't going to happen]. I [had] plaster busts on my piano of all the great composers—Bach, Beethoven, Brahms, and all the guys I really looked up to as my heroes. As I was improvising and playing something, looking at my heroes, I realized...they're all dead. It's not a job anymore. You can't do [that] job. [I decided,] "All right, I'll just be a musician then, I won't be a composer." But I really always wanted to be a composer.

MacAddict: And you went to Juilliard?
Michael Kamen: I went to Juilliard as an oboe player. I studied the oboe very seriously and very successfully. But part of the reality in my life is life itself. It was the late '60s, and there was no way I was going to be simply a classical oboe player....[So] I started a rock-and-roll band—and the overall message to me was: Life is to be embraced. It's nice to study the oboe, but it's even nicer to be part of the world around you.

MacAddict: What inspired you to do film scores?
Michael Kamen: I was eager to do film from the time I first [saw] *The Twilight Zone* on television with Rod Serling's beautiful scripts and sometimes the music of amazing composers—Bernard Hermann and Jerry Goldsmith....I loved that. I loved the fact that music could be perched on the edge of fear. It had that much of a connection to me. I loved the science fiction aspect of it, but even more [I loved] the idea that the music could suggest the weirdness of it all....I used to sit at the piano and see if I could scare myself to death with a three-second piece of music. I'd just sit there getting creepy and realizing that you really could.

MacAddict: What was the first film you scored and how did that come about?
Michael Kamen: [In the rock band] I had a manager. He was a very solid character, [and] his partner was producing a film....I said, "I'd really like to do a film score," and he...hired me. I guess he thought I was good. I hope he thought I was good, but I know he understood completely that I was not only cheap, I was free. I would do it for nothing. I'd pay *him* to [let me] do it, just because it was fun. So I did a film called *The Next Man,* which was a real film—[it] had Sean Connery in it....It was daunting and scary, but very pleasing....I got a lot of courage from doing that. I'll bless [producer] Marty Bregman until I find a film score I can't write. Marty Bregman gave me *The Next Man.*

I was eager to do film from the time I first saw *The Twilight Zone* on television with the music of amazing composers.

MacAddict: Back in the '70s, how did you go about writing the score for an entire feature film?
Michael Kamen: One dot at a time with paper and pencil.

MacAddict: When did you start working on your first Mac?
Michael Kamen: I...worked on *Edge of Darkness* in 1984. By that time I had a Kurzweil [sampling keyboard], and I was told that the Kurzweil [could write to] something called a Macintosh hard disk. I didn't know what that was, and I didn't want to spend a lot of money on it. But when they told me it could write the music I was playing, I had to get one. I bought my first [Mac] because there was a program called Total Music, and you could play something on the keyboard, and only 5 or 10 minutes later, when it figured out [what you had played], it started spelling it out on the screen. Of course, it didn't look very good, but it was the notes you'd played, and it looked like a professional had been at work....Then I discovered that you could move the bar lines and work to a click [to] make [your score] precise....[It made me feel] like I could get away with writing dozens of movie scores every week...because the most laborious task is writing music on paper for all the instruments. This was seemingly going to be a way out of that. It isn't, really. You still have to use your brain, which is the most powerful instrument in the world.

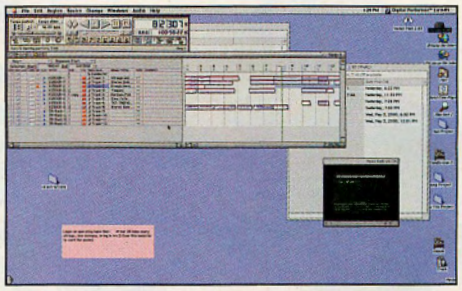
Composing for Metallica

When writing an orchestral score for a selection of Metallica songs, Michael Kamen had to rely heavily on Digital Performer. The program's notation-editing function allows a user to view MIDI music as notes on a sheet of musical paper—a function Kamen used to score Metallica's music one note at a time, one instrument at a time.

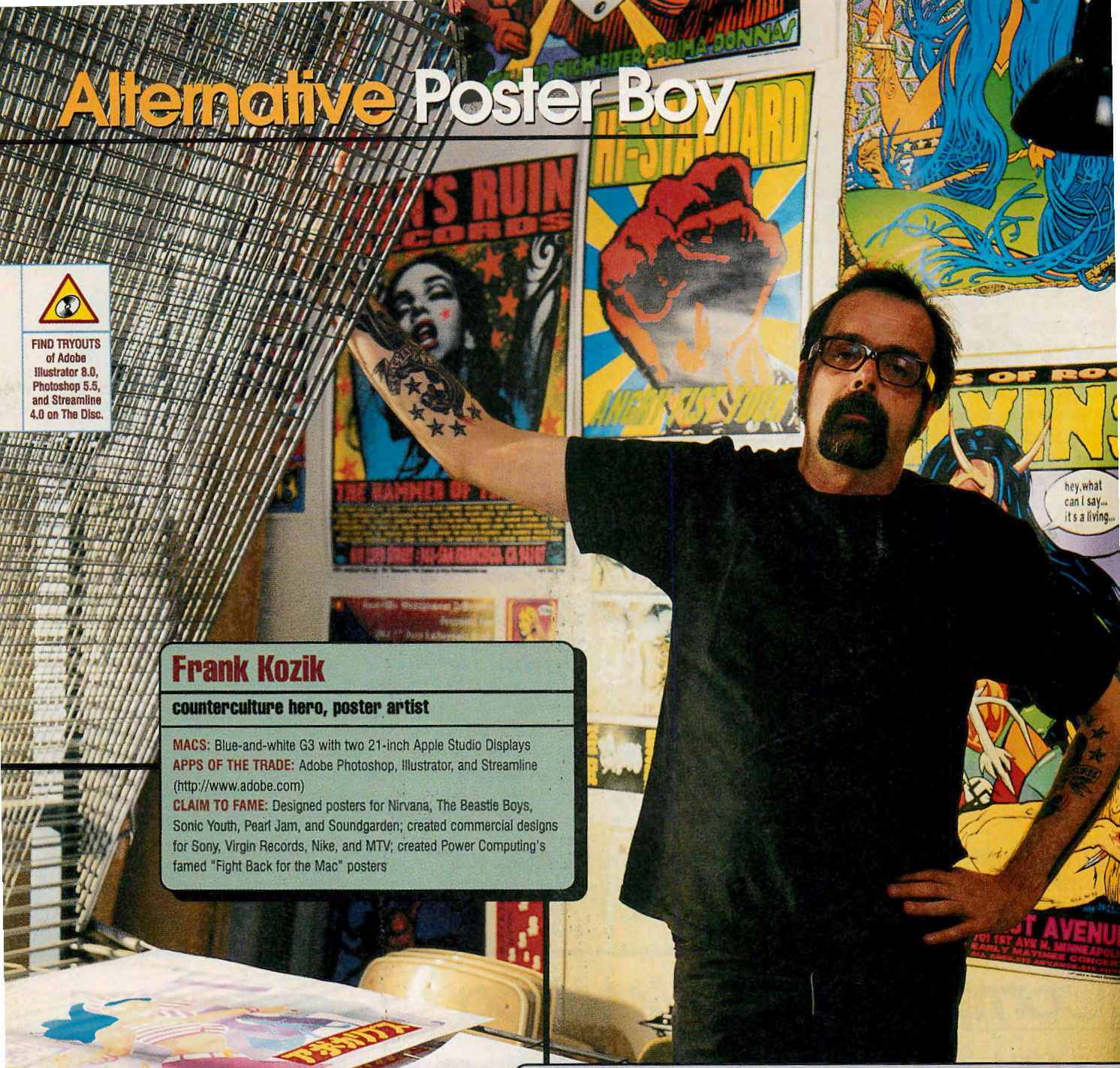
The process started with Metallica sending Kamen the CDs of the songs the band wanted him to orchestrate. Kamen digitized those songs and loaded them as two digital audio tracks (right and left stereo) in Digital Performer. He then adjusted Digital Performer's click track—a mutable metronome click in the program to help play in time—to play at the same rate as the actual songs. With his Mac hooked up to a Kurzweil 2500 workstation, which offers hundreds of possible synthesized audio sounds for MIDI use, Kamen added tracks one by one for each instrument in the orchestra. As he worked on a track in Digital Performer's notation mode, he placed each note on the score individually using the mouse. According to Kamen, all of this was necessary because Metallica's songs are too fast for his improvisations. The entire process, says Kamen, could never have happened without his Mac and Digital Performer. When he finished the score, he distributed the sheet music to the San Francisco Symphony, which was standing by to play a live concert with Metallica.

PRECISELY ADJUSTING NOTES in Digital Performer simply requires selecting the track, opening the score window, and moving the note.





Alternative Poster Boy



FIND TRYOUTS of Adobe Illustrator 8.0, Photoshop 5.5, and Streamline 4.0 on The Disc.

Frank Kozik

counterculture hero, poster artist

MACS: Blue-and-white G3 with two 21-inch Apple Studio Displays
APPS OF THE TRADE: Adobe Photoshop, Illustrator, and Streamline (http://www.adobe.com)
CLAIM TO FAME: Designed posters for Nirvana, The Beastie Boys, Sonic Youth, Pearl Jam, and Soundgarden; created commercial designs for Sony, Virgin Records, Nike, and MTV; created Power Computing's famed "Fight Back for the Mac" posters

Frank Kozik loves the poison pill. One of his silk-screen posters advertising a Sonic Youth show in New York features a smiling kitten dressed in what appear to be pajamas, standing on its hind legs. It isn't until you look at the poster a second time that you notice the kitten's paws are severed, leaving only bloody, bandaged stumps. That, as Kozik says, is how he wins. You look at the poster again, and the image sticks in your mind. Kozik's savage sense of humor, his cartoon-bunny-meets-Satan imagery, and his use of vivid color have elevated his work from mere music marketing into the realm of art. He has done pieces for almost every modern-era rock band, some now selling in the aftermarket for hundreds of dollars. Long-time Mac fans may remember his Power Computing "Fight Back for the Mac" series from 1997. Many credit Kozik with singlehandedly reviving artistic concert posters from their 1960s tomb, and he'll be the first to tell you he couldn't have done any of it without the Mac.

Q&A with Frank Kozik

KOZIK'S USE OF SLUGGO cost Power Computing big bucks.



***MacAddict:* You started doing poster art in Texas. How did you get into it?**

Frank Kozik: I started doing little Xerox-type punk rock flyers, and it slowly grew from that. I eventually started working at a club where the guy was doing larger, offset-type posters, so I did a few of those. That went on for years, just at a local level. Fortunately, a lot of the early bands I did stuff for went on to be really famous, which helps now, right? Eventually I won an award from the local weekly for the best poster, and I'm, like, "Okay, this has got to be good for something." So I went to the one cool T-shirt place in town that made wacky T-shirts and said, "Hey, give me a job, I'm, like, this artist guy."...Eventually I started doing weirder designs for their normal clients, and when I left, I took a bunch of their clients with me. This was about 1988. That's when I went freelance and started to make a living off it.

***MacAddict:* How much of your poster design do you do by hand?**

Frank Kozik: Anything you see illustrated on the poster is a drawing that I do. There are all these different styles. [In] the stuff that looks cartoony, there's actually a drawing. I scan it in, clean it up, and size it up. I do all the text in Illustrator because I hate doing the lettering—it was always my bane....I don't like to draw on the computer or do 3D-type graphics 'cause no matter how good you are, it still looks kind of hokey.

***MacAddict:* How do you go about making a poster look distressed?**

Frank Kozik: There are a lot of layers....I use the layer masking tools and I use the filters in those tools. I'll just pick up anything, like a piece of old paper, and scan it in. Then I'll take a photograph and scan it in. Then I'll take another photograph and scan it in. And I'll sit there and I'll color correct them all so they match. I'll start to arrange them in layers. For example, I'll take the photograph and give it some film grain. Then I'll take the piece of paper, layer that over it, and run some filters on it to randomize it and noise it out.

Then [I] just randomly select a few colors—do a select similar—and delete all of those, so you get a random deletion of stuff. [I] take that random pattern, make it somewhat translucent, fuzz it out, and meld it into the photograph. All of a sudden it gets this really cool-looking texture. It's hard to explain in words. It's a lot of sitting there and playing with it.

***MacAddict:* Do you have favorite filters from Photoshop?**

Frank Kozik: I love this old filter called Color Halftone. I use [it] a lot. It's in the Pixilation filter....[It's] a really killer effect for a lot of the stuff I do. A lot of times I'll take vintage material like an old page of ads, delete all the text, add my own stuff for liner notes or something, [use the Color Halftone] filter, and it makes it a perfect match. It looks like the thing was printed 50 years ago.

***MacAddict:* How did you end up doing the Power Computing posters?**

Frank Kozik: This guy I knew from the punk rock days was working for a design firm that was [Power Computing's] agency. It was pretty cool because the guy who owned the company was personally involved in the campaign. He's like, "I want to piss everybody off, I want to be real aggressive." We did a thing with Sluggo, and I was like, "You're gonna get sued." He was like, "I don't care."...It was cool because it was the only time when the actual owner, a CEO of a big company, was talking to me on the phone about [a commission]....I think that's why he made a good product. He was really motivated to be involved in his business on a personal level.

***MacAddict:* Is there a process you follow when you design a poster?**

Frank Kozik: There are some rules. Number one...it has to actually convey some information. When you see it—and you've got to be able to see it really quickly—you [should not have to] stop and try to figure it out. That's bad for a poster. Minimal text with maximum information in the text—who, where, when. That's the first rule. Copy should be as big as possible, unless it's something that's supposed to be artsy and obscure. [It should also be in] as large a format as possible to attract attention....Designwise, I follow the old adage—start at the upper left-hand corner [as well as] spiral around to the middle....All of my stuff is directed that way, to bring you in so you keep looking at the poster over and over again. I like the poster to look somewhat normal, until you actually take a second look at it, and then there'll be something weird in there—ironic juxtaposition of information and imagery.

***MacAddict:* Your posters appeared in the Smithsonian?**

Frank Kozik: Yup. They did a big exhibit a few summers ago—20th-century American posters. This really nice 80-year-old curator came out and pawed through everything. The stuff she picked was the nastiest stuff I have. It was really cool.

***MacAddict:* There are a lot of people who imitate your style.**

Frank Kozik: Well, it's hard not to because my whole thing is I'm into stuff looking kind of generic. What I do is not about my being an artist, because I don't consider myself an artist. To me an artist is somebody who can sit down and paint some amazing thing. What I do is advertising, it's design, it's whatever—it's a poster....There are people doing stuff that's way better than mine....But there are a lot of people [who try to] imitate what they perceive as my style. They never really get it right because they don't understand that the way it looks is not what matters. It's the context within the piece that's really important....You can't just put a picture of Fred Flintstone on any old poster and stick a swastika on him and have it work.

***MacAddict:* Do bands ever dislike your representation of them?**

Frank Kozik: Four times I've had problems. One time it was some real political [issue]. I'm not political....I hate politics. Strangely enough, I always have problems from the left. It's always the super-left-wing, PC, vegan, militant, transgender types [who say] "That's degrading or whatever."

***MacAddict:* What can you do with computers that you weren't able to do before?**

Frank Kozik: Fifteen years ago I would do a little four-color poster and it would literally take me a week with a color wheel and sheets of Letraset....With the computer [it takes] 15 minutes. Dial in those fonts, sit there and pick the percentages, and Shift-F5—bing bing bing bing bing. The computer allows me to make a living off this. It allows me to compete as an individual....I compete successfully for commissions to major companies, and...I don't have to have a hundred employees. The computer revolution is the best thing that's happened to individuality and self-expression in the history of man. Anybody that's willing to get off their [butt] can do exactly what [they] want and make a great living....Sending a JPEG—it's there in three seconds. The next day it comes out in a magazine. How amazing is that? That's a big deal.

Making CMYK Silk Screens

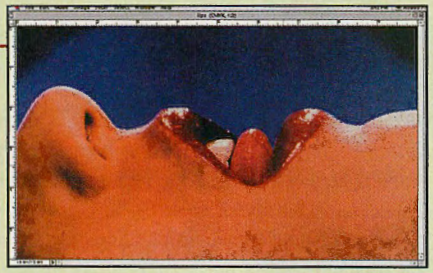
Two hallmarks of Frank Kozik's posters are the use of images appropriated from old books and magazines, and silk-screen printing. Both of these elements, however, have major drawbacks. Images scanned from magazines rarely have the resolution and quality to come out at poster size, and silk screens don't play very well with a CMYK process (necessary for quality photographic images). To get around these pesky irritations, Kozik utilizes two different filters: Adobe's Dry Brush filter (originally available as an Adobe Gallery Effects add-on filter, it now comes with Photoshop) and the Color Halftone filter (one of Photoshop's Pixilation filters). Here's how it works.



MAKING A CMYK POSTER that will print on a silk-screen printer can get a little tricky.

1 Set It Up

Scan in a source image at 300 dpi and at the final size you'll want for your poster. When scanning, save the image as a CMYK file. Make any color adjustments in Levels or Curves (both under Adjust in the File Menu). If your source image is small, you'll need to blur it slightly to avoid moiré patterns. Use the Gaussian Blur function (under Blur in the Filter menu) to set a one- or two-pixel blur.



FOR OUR SAMPLE *MacAddict* poster, Kozik enlarged a colorful picture of some lips he found.

2 Brush It On

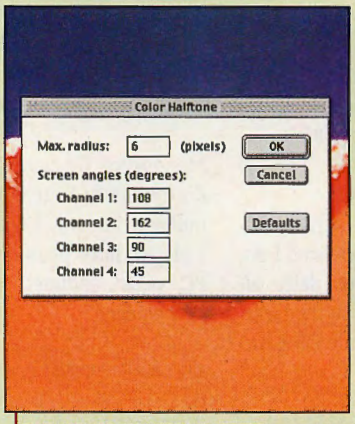
For running filters, convert your image to RGB. The first filter to use is Dry Brush, available in the Artistic submenu of the Filter menu. This filter makes the image appear as if painted with a brush. Set the filter to use a small brush size in order to preserve as much detail as possible.

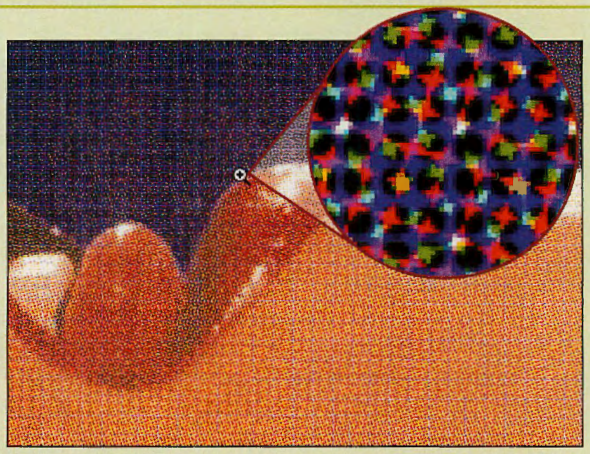


A DRY BRUSH FILTER will help make an overenlarged image look more elegant.

3 Pixilate

Next use Color Halftone from the Pixilate filters (found under the Filter menu in Photoshop). This filter effectively separates the colors in the image into individual dots, which relieves the silk-screen printer from having to blend cyan, magenta, yellow, and black (which it can't do as well as a traditional offset printer). To use Color Halftone, launch the filter and set the Max. Radius setting to as low a number as possible while still yielding a noticeable result. You may have to try a few different settings on this to get it right. The bigger the image, the higher the radius setting you must use.

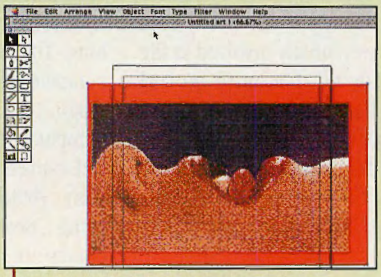


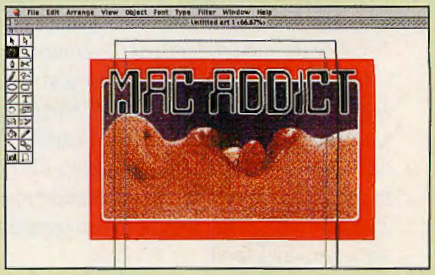


THE COLOR HALFTONE FILTER separates the colors of an image and can simulate old-style or comic-book printing.

4 Head Off to Illustrator

Next you'll want to convert your image back to CMYK and make any final color adjustments. Save the image as an EPS and open it in Illustrator, where you can add a background and type. For silk-screen printing, make all color values 100 percent within Illustrator (100 Magenta and Cyan for the background example). Once you have added the vector art you want, you are ready to print. Now all you need is your own silk-screen printing press.





TO PUT THE FINAL TOUCHES on your poster, take it back to Illustrator and add a background and text.

The Fine Art of Fonts



FIND TRYOUTS of Adobe Illustrator 8.0, Photoshop 5.5, and Streamline 4.0, plus Chank Free Fonts, on The Disc.

Chank Diesel

font designer

MACS: G4 400MHz, 6100/60, two iMacs
APPS OF THE TRADE: Adobe Illustrator, Photoshop, and Streamline (http://www.adobe.com), Macromedia Fontographer (http://www.macromedia.com)
CLAIM TO FAME: Mister Frisky font, used on Welch's Grape Soda can, Taco Bell's 1996 Halloween wrappers, McDonald's McSalad shaker, and Prince's *Crystal Ball* album; the Smithsonian's Cooper-Hewitt National Design Museum features his fonts

Chank Diesel is an artist in almost every sense of the word. If you can't tell from his Minneapolis loft walls swathed in big, bright-colored paintings, then surely his painted fingernails and black-on-black fashion sensibilities are dead giveaways. But Chank isn't your traditional painter or sculptor—he calls himself an *alphabetician.* Whether he's designing a new font or incorporating letters into his paintings, everything he does focuses on the alphabet. Lettering, however, did not always come easily for Chank, whose sixth-grade teacher used to keep him after school for handwriting practice, where he would endlessly doodle letters. It was those days—and watching Sesame Street—that led to his fascination for lettering, even though he'll readily admit that his handwriting still kind of stinks. Amazingly, though, all of that letter doodling paid off—in the form of a successful font company and his life as an independent artist. Now Chank sells fonts (he's created more than 200) via his Web site (http://www.chank.com) and runs a Font-of-the-Month Club with 500 font zealot members, all of whom receive a new font via email on the first Monday of every month. The commercial viability of his font business means these days Chank gets to spend more time on his artwork. He gets sick of sitting in front of a computer (yes, even his beloved G4) for upward of eight hours a day; art, he says, provides a good escape from his screen—which doesn't mean he's given up on fonts. After all, once a doodler, always a doodler.

Q&A with Chank Diesel

MacAddict: What are some of your favorite fonts, and why?
Chank Diesel: I like Mister Frisky because it's mine and it's everywhere, and I get to see it on TV and say, "That's Mister Frisky." I like Liquorstore because it's just so nice. It's so rigid and industrial and boring and plain, but it's mine—it's unique in some way, and I really like it. Omnivore [by Pat Broderick] looks like 1977 Mannix. I mean, it's just so retro, [like it's] from...Aaron Spelling's time. But it's really bold and it's really strong.

MacAddict: What kinds of fonts don't you like?
Chank Diesel: Helvetica Oblique, which is what they used for all the signage at the strip malls built during Ronald Reagan's 1980s that say "One-Hour Photo" or "Dry Cleaners" or "Video Store."...And Helvetica in general, just because it's been overused. It was apparently a really cool, hip new font in 1961, but now it's everywhere, and I've seen enough of it. But the italic, the oblique in particular kind of bugs me. Times I've seen enough of....It's not very elegant compared to other Roman fonts.



CHANK KEEPS A KEEN EYE out for signs in the neighborhood and uses them as inspiration for his fonts.

MacAddict: Where do you get your inspiration for new fonts?
Chank Diesel: One of the inspirations is seeing people use my fonts and use them wrong. When somebody tries to make a bold version of Mister Frisky, it's like, "Oh, I've got to make a bold version of Mister Frisky that looks good, otherwise people are going to make bad 'emboldments' of Mister Frisky."...Also, during trips to the antique store, you'll see a font on a little bottle of pomade or something from the 1950s that isn't around anymore. Sometimes it's hand-drawn logos from the '40s and '50s, and I can extrapolate from that and make a whole font based upon that logo. So when I see letters I like that I have not seen a font for, that's when I make the font....Other times it's just little games I play—like, "What if I start with a shape for every letter and then try to carve the letters out of that shape?" Then I could spend up to 45 minutes on each letter, and that's it....I can get as crazy as I want.

MacAddict: And you take inspiration from signage as well?
Chank Diesel: Yes. There's a liquor store [nearby]—it's got a big sign that says Liquorstore. And I thought, "That looks really good, so I'm going to make a font called Liquorstore." And then I did the Parkway Theater in South Minneapolis—I made a font based upon [its] marquee....

Sometimes there are fonts you just have to use as a designer. [For example,] you need Futura Condensed Extrabold when you want something like a phone number to be really bold, sans serif, easy to read, nice. But I don't use other people's fonts anymore, I only use my own. So I created a substitute for Futura Condensed Extrabold. I tried to re-create it from memory [since it's] the most overused typeface in advertising design history....As it turned out, it's very different from Futura Condensed Extrabold, but it's mine, and it's called Mingler Nipsy.

MacAddict: Do you believe anyone can be a font designer?
Chank Diesel: Sure. But to be a respected or a good font designer is something different. I think to do that you need to have experience using fonts. You have to know what a font is, and you have to know how to use it before you can make good ones.

MacAddict: What's the trickiest part of making a font?
Chank Diesel: Doing the first one. You run into these little problems. I was stuck for a month trying to figure out how to get things from Illustrator into Fontographer. I could create the outlines and do the design of the font and it all looked perfect in Illustrator—all the curves there, everything was looking good. But it would not import into Fontographer. I could not do it. You've got to hold down the Option key as you use the pull-down menu. You can't use the keyboard shortcut to copy....And likewise you might have problems getting it from Photoshop into Fontographer or Photoshop into Illustrator. And it does lots of weird things when you convert a bitmap to an outline. But you can control that [by playing] with it.

MacAddict: Do you consider font-making an art?
Chank Diesel: Oh, sure, yeah, yeah. I call myself an alphabetician because I create things with the alphabet. Whether it's a typeface or a painting, what I keep making is the alphabet—that's my subject matter.



THE FONT STILL KNOWN as Mister Frisky adorns Prince's (formerly the Artist Formerly Known as Prince) *Crystal Ball*. Chank even created a character in Mister Frisky for the symbol Prince was using as his name in those days.

Chank's Font-making Tips:

1. Don't design fonts in order from A through Z because the font will tend to change through the alphabet. Chank suggests skipping around from letter to letter, which makes quirks in your font seem less obvious and makes it impossible to tell by typing out the alphabet that the font changed halfway through.

2. Create a sample Quark document with lots of words that feature different letter combinations. Apply the new font to the document, print it out, and examine it for mistakes, quirks, and things you don't like so you can adjust them in Fontographer.

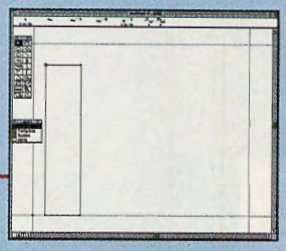
3. Make sure you adjust spacing between words by selecting the spacebar character in Fontographer and changing it by moving the vertical right line to the left. The space between words should equal the width of a lowercase "i."

4. Sometimes the spaces inside open letters like "O" or "e" will fill in solid when you preview them or print them out even though the outlines look correct onscreen. Fix this using Correct Path Direction under the Element menu in Fontographer.

Making a Simple Font

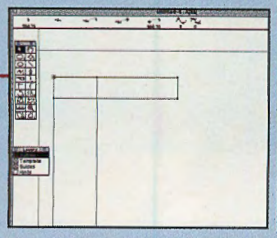
Thanks to Macromedia's Fontographer, just about anyone can design and create a usable font these days. The question is whether just about anyone can make a *good* font. On his Web site (http://www.chank.com/howto/makefonts/index.html), Chank offers a tutorial for making a hand-drawn font, scanning it, converting it from grayscale PICT format to PostScript outline format in Adobe Streamline, and creating the font in Fontographer. Here we show you something a little different: a simple and easy way to make a geometric font straight in Fontographer.

1 Use the Rectangle drawing tool and draw a box that represents the left part of the letter *A*.



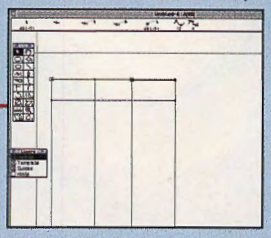
AN *A* WILL be the basis of the rest of your alphabet.

2 Use the same tool to draw the top part of the *A*.



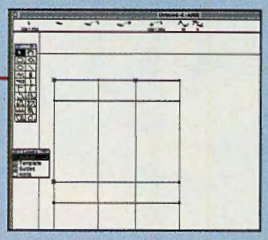
USE TRIAL AND ERROR to figure out how long to make the bars of your *A*.

3 In the Tools palette, change back to the Arrow tool and double-click the first box you created. Copy and paste that box, then move the duplicate box to the right side of the *A*.



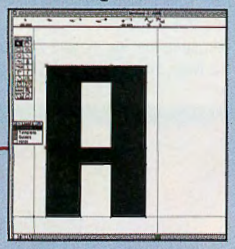
COPY-AND-PASTE the left bar of the *A* to form the right.

4 Double-click the top box, copy and paste it, and move the duplicate to form the middle of the *A*.



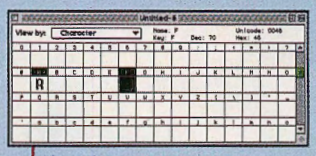
TO FINISH UP THE *A*, simply copy-and-paste the top bar and move it to the middle.

5 Go to the View menu and select Preview to see the letter filled in and get an idea how it will appear as part of a font. Then move the space marker (the right line) to decrease the space to the right of the letter, and use your eye to judge the appropriate amount (this marker denotes how much space exists between letters).



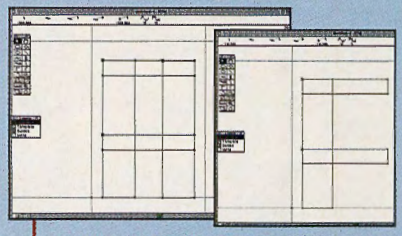
PREVIEWING YOUR LETTERS gives you a better sense of what they will actually look like.

6 With your *A* open, use the Select All command to copy the whole letter. Then double-click the *F* box and paste the *A* into the *F* space.



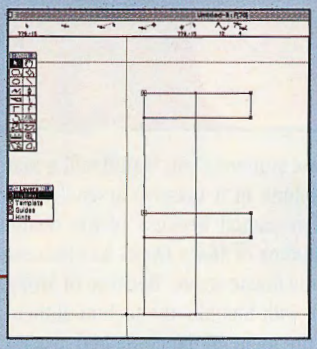
THE *F* COMES DIRECTLY from a copy of the *A*.

7 Delete the right part of the *A* to form the basis of the *F*.



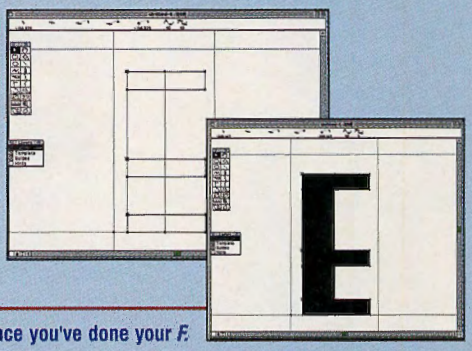
WITH A LITTLE TINKERING, the *A* is quickly transformed to an *F*.

8 Select the horizontal bars (to select both, drag an invisible rectangular box over the right side of both bars) and shorten the *F* bars. Then shorten the spacing to the right of the letter and preview your *F*.



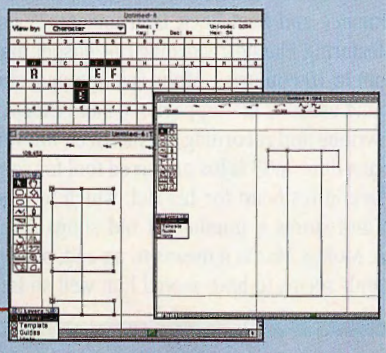
IT'S IMPORTANT TO SHORTEN the bars on your *F*.

9 Use the Select All command on the *F* and copy it into the *E* box. Then copy and paste the middle bar and drag it to the bottom of the *E*. Preview the *E*.



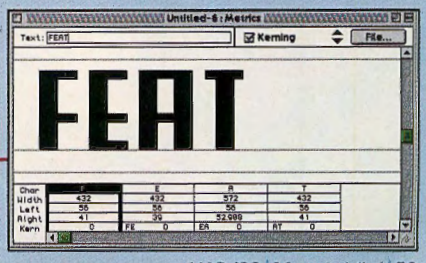
THE *E* IS A BREEZE once you've done your *F*.

10 Do a Select All on the *E* and copy it into the box for the letter *T*. Delete the bottom and middle bars of the *E*, then center the left bar to create a *T*.



THE *T* COMES straight from the *E*.

11 While you're building your font, take a look at how the letters work together. In the Open Metrics Window under the Windows menu, start typing some of the letters you've created to see how they look and whether you've spaced them correctly.



OCCASIONALLY TYPE OUT WORDS to see how your letters look together.

Moby Slick



PHOTOGRAPH BY MEI TAO

FIND A DEMO OF CUBASE VST/24 4.0 on The Disc.

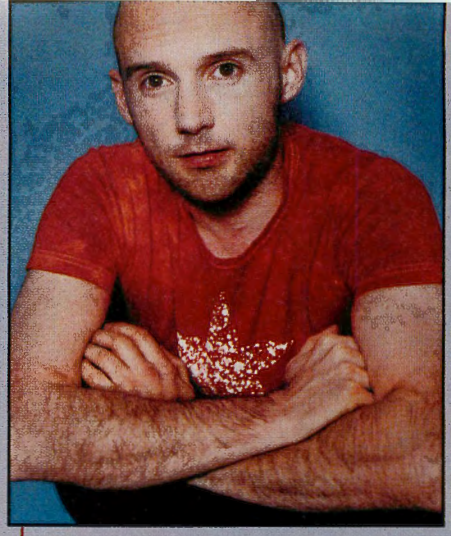
Moby

musician, electronic music innovator

MACS: IIci, G3, iBook
APPS OF THE TRADE: Steinberg Cubase VST (http://www.steinberg.net)
CLAIM TO FAME: More than 10 albums, including his latest release, *Play*, which went platinum in June; the platinum single "Go," named one of the Top 200 Records of All Time by *Rolling Stone*; *Play* named in the Top 10 and 20 Albums of the Year lists by *USA Today*, the *New York Times*, and *Spin*, among others

Moby is not someone you would call a Mac addict. To him, a Mac is but one machine in a massive arsenal of tools he uses to create music. Moby (so named because of his relation to great-great-grand-uncle Herman Melville, author of *Moby Dick*) has become something of an icon on the worldwide electronic music scene. Because of Moby's role in the early 1990s burgeoning rave scene with hits like the techno anthem "Go," one might be tempted to relegate him to the niche of dance-techno artist. In fact, he is much more than that. Moby received Grammy nominations this year for Best Alternative Music Performance and Best Rock Instrumental Performance, and his newest release, *Play*, featuring classic recordings of gospel and blues vocals, has gone gold or platinum in 10 countries. Moby is a one-man show. He plays all of his own instruments and eschews the support of a band except when it comes to performing live. When writing and recording, he has been known to hole up in his studio for up to a year at a time. A G3 is his preferred tool for sequencing, although he holds a special place in his heart for his IIci, which to this day still occupies a space in his studio and stores a number of old songs. Don't mistake him for a tech-head, though. Moby's Mac is a means to an end, solely a tool for his creative endeavors. It certainly seems to have served him well so far.

Q&A with Moby



PHOTOGRAPH BY MEI TAO

SINGER, SONGWRITER, great-great-grand nephew of Herman Melville, Grammy nominee, vegan—what a combo.

***MacAddict:* Which programs would you say every digital musician should have?**

Moby: There's so much software out there, so many different types of music recording programs, music sequencing programs, music editing programs. I know a lot of people who basically do everything on their computer. They sequence on a computer, they record on a computer, they even generate sounds on the computer, they mix on the computer. I'm kind of old-fashioned in the sense that I really just do sequencing on a computer. For my next record I am probably going to get a ProTools setup...[and] some sort of hard disk recording system.

***MacAddict:* Can you explain what sequencing is?**

Moby: One way to think of it is [as] the composer versus an orchestra. When I'm sitting at this...controller keyboard, I'm the composer. The computer records what I'm playing. It doesn't record the audio. It's like sheet music. The computer becomes [my] sheet music, but then uses all my different pieces of equipment as the orchestra.

***MacAddict:* How did you do sequencing before you had a computer?**

Moby: I had an Alesis MMT-8. It was a little $200 sequencer that was wonderful. I loved it. It was quite limited, but I got lucky because this was the mid to late '80s, and not much [was] available in terms of sequencers. A lot of them were very clunky and hard to use, and Alesis came out with [the MMT-8], which is wonderful.

***MacAddict:* How did your Mac extend your capabilities?**

Moby: In more ways than I could count. I mean...there was nothing visual about [the Alesis]. There was a teeny little screen that would tell you what track you were on, and that's about it. [With] the Macintosh you could do so much more as far as editing [goes], and just having a visual interface [meant] you could actually see what you were working on and move things around and do things you could never do with other sequencers.

> To me the whole purpose of being a musician is to make music that I love. Technology should serve that practice, not vice versa.

***MacAddict:* Did that change your music a lot?**

Moby: I don't know. Possibly. I mean, one danger with sequencing on a computer is [this] visual element that's quite interesting in and of itself. I know sometimes you can be working on a piece of music and sort of get seduced by the computer screen. So instead of devoting 100 percent of your attention to what you're hearing, you're devoting 80 percent of your attention to what you're hearing, another 20 percent to watching the cute little cursor move across the screen.

***MacAddict:* What are some of the problems you run into when you're using Cubase?**

Moby: There's a lot of stuff in there that I never use. You know, I go through the menus, and there are just a lot of things I have never even gone into. Then there are a few things I thought I would never, ever use—like Cubase can generate a score, printed music....I always thought, "Wow, that's an interesting feature, but I'll never use it." Then I was working on some music, and I was hiring a brass section and a string section....I was able to take stuff I had written on Cubase and print it out as a score and give it to them—it worked like a charm.

***MacAddict:* What would you recommend for novice musicians in terms of tips for using Cubase?**

Moby: My approach is very old-fashioned, you know? Nowadays most people do everything on the computer. You *can* do everything on the computer....So my advice to someone starting out would be [to] get a computer and just do everything with it. I think that's such a cool idea—you could have a whole music studio that involves a computer, a keyboard, an amplifier, and two speakers. That's it. [If] you come to my house, I have a room that's just filled with equipment. I think it would be so nice to have a room that just had a computer and a controlling keyboard.

***MacAddict:* Do you follow any kind of formula when you write music?**

Moby: To me the whole purpose of being a musician is to make music that I love. Technology should serve that practice, not vice versa. I have some friends and some people I know [who] are engineers, and they worry about the stupidest stuff....They spend too much time focusing on the minutiae, focusing on the trees and not the whole forest anymore. So I think that, especially when it comes to the realm of computer-generated music, it's really easy to be completely anal and obsessed with the teeny little details. That's the biggest danger. Someone [can] spend three days making a kick drum sound nice [and] no one's ever going to notice.

***MacAddict:* How did you start using a Mac?**

Moby: I bought my first computer in 1989. At the time, everybody I knew used Macintosh....It used to be that everyone in the United States who made music with computers used Macintosh. Now that's changed....In the late '80s especially, PCs seemed like they were boring and flat and weird, like those were the computers that businessmen used.

***MacAddict:* What's your take on the whole MP3 revolution?**

Moby: It's interesting. I think in some ways it's foolish to have too strong an opinion on it now because the form of downloaded music right now is completely different than what it will be in five years. When you can instantaneously download a whole album, that's when it'll be really interesting. Right now it's still too slow.

***MacAddict:* How do you feel about people, say, illegally trading your music?**

Moby: I'm flattered.

***MacAddict:* Why is that?**

Moby: Most people I know who listen to a lot of MP3s will download a lot of different songs, and if they like the song, they'll go out and buy the album. The record company doesn't want me to say this, but if out of the millions of MP3 files that are out there, someone chooses to download one of my songs or an album of mine, I'm very flattered.

Re-Creating Reality



FIND A DEMO of Commotion 2.2 on The Disc.

Eric Chauvin

digital matte painter, special effects wizard

MACS: G4, Power Computing PowerTower Pro, original PowerBook G3

APPS OF THE TRADE: Adobe Photoshop and After Effects (http://www.adobe.com), autodessys's formZ (http://www.formz.com), Electric Image's ElectricImage (http://www.electricimg.com), John Knoll's CyberMesh Photoshop plug-in (available through the Puffin Designs Web site), Puffin Designs' Commotion (http://www.puffindesigns.com)

CLAIM TO FAME: Worked a stint at special effects house Industrial Light and Magic (ILM); founded his own special effects company, BlackPool Studios; digital matte painting and special effects work for TV shows including *Voyager* and *The X Files,* as well as movies including *Contact* and the original *Star Wars* trilogy rerelease; won an Emmy for visual effects work on an episode of *Young Indiana Jones*

Tucked away in the uppermost northwestern corner of Washington, Eric Chauvin lives anything but a glamorous existence. Thick forests, a duck-and-fish pond, and a pair of toolsheds he built himself surround his house and work studio, located about halfway between Seattle and Vancouver—not exactly a place you'd expect to find Hollywood mining for talent. An alumni of Industrial Light and Magic, George Lucas's special effects house, Chauvin credits much of what he knows to his first project—a six-month stint working as a matte painter on *Hook* for ILM. Now Chauvin is going it alone as the founder, head, and sole employee of BlackPool Studios, a humble little special effects company responsible for scenes in some of the biggest movies and television shows around—*Mission to Mars, Starship Troopers,* and *The X Files,* to name a few. His job? Producing things that don't exist and are too expensive to build—for instance, creating a space colony shot, placing a massive boat where there isn't one, making it night when it's really day. Most likely you won't actually remember any of Chauvin's work—oftentimes it involves subtle backgrounds, quick transitions, or five-second change-of-scenery shots. But that's the point—as Chauvin tells it, what he does should remain invisible—almost go unnoticed—or he's not doing his job correctly. Subtlety, it seems, can exist even in Hollywood.

Q&A with Eric Chauvin

MacAddict: You call yourself a digital matte painter. What exactly does that mean?

Eric Chauvin: Matte painting began [as a way to avoid having to] build an elaborate set. [Instead, studios would] actually place a piece of glass in front of the camera, and an artist would do a painting on the glass. From the camera's point of view, you could see the painting, and part of [it] would be scraped away. [As it was] glass, you could see through it...[and] what [you] saw was people moving around in a small portion of the frame. Everything else was fleshed out as...a big, elaborate set....Eventually they figured out ways of doing these composites—not necessarily [putting it] on camera all at the same time, but shooting a plate by itself and then taking it into the studio and doing the painting after the fact, or combining it with other methods. When I got into this in 1992, the next logical step...was working on computers.

MacAddict: How has the quality of matte painting progressed over the years?

Eric Chauvin: Now the thing doesn't necessarily have to be a flat, two-dimensional image. It can...be three-dimensional, and the camera can actually move through the environment—which is where a lot of the shots I've been doing lately are going.

MacAddict: Can you do a walk-through of how a typical shot would come together?

Eric Chauvin: [Usually my effects supervisor will] call and say, "I've got a show coming up, we're going to want one or two shots, and this is what this image needs to be. We're shooting the plate next week."...They send me either a Jaz disk or a FireWire [hard] drive that has the consecutive frames on it. I'll then download it to one of my drives in my computer, and I'll do the painting and the composite...and they then cut it into the show.

> The first machine I worked on was a IIfx. I remember thinking at the time, "Man, this is really cool."

MacAddict: Who was the first to do digital matte painting?

Eric Chauvin: Well, I'd have to say it was us, at ILM....In 1991 we were working on *Hook*, and that was all using totally traditional methods...real paint on real glass. By 1992 we were working on Macintoshes, doing things digitally.

MacAddict: So it was all Macintoshes at ILM?

Eric Chauvin: Yeah. I think the first machine I worked on was a IIfx. I remember thinking at the time, "Man, this is really cool." I actually had a PC at home—a 286 or something. And like most people using DOS, I was thinking, "Well, that's a real computer," because it has a command line and that sort of thing. [But] after a few days on the Mac I was completely in love with it. I wanted to buy a IIfx, because at the time the IIfx had a 40MB hard drive and 12MB of RAM, and I thought, "Man, that's all anybody needs." When it did come time for me to buy my first [Macintosh] computer, I actually bought a Quadra 950.

MacAddict: Has ILM made the transition to a Unix-based system?

Eric Chauvin: The folks at ILM in the matte department are still working on Macs. They actually expanded their use of Macintoshes....They found [it] is...more cost effective to have people [work] on a Macintosh doing composites in After Effects versus having to use either an Inferno or Flame, or Sabre (what they called the other version of Inferno at ILM), or any other SGI products....[SGI machines are] better served working on more complex kinds of shots, where maybe After Effects isn't the best way to go. But for just your basic composites, working on a Macintosh seemed like the best way to go. I didn't work on *Phantom Menace,* but I know a lot of the shots in there were actually done from beginning to end on a Macintosh.

MacAddict: What are some of the keys to good special effects?

Eric Chauvin: Well, believability is probably at the top of the list. You don't want your audience to be lost in the story and all of a sudden [encounter] a really bad effects shot, and go, "Oh, god, that looked horrible." You want them to...be completely oblivious to it....You don't want people to [lose their] suspension of disbelief.

MacAddict: What kind of mistakes might someone who's less experienced make?

Eric Chauvin: Well, it could probably run the gamut....If [I am] doing a shot where [I'm] adding architectural elements to an existing scene, the first thing I do is figure out all the perspectives in the plate and then mimic that when I set up my camera in ElectricImage. Once I've got that, I know anything I plug into the shot is going to line up perfectly, with linear perspective. A lot of people don't realize that you really need to take the time to...get the perspective right....Another thing is whenever you get plates for a TV show, they're always just slightly soft. When rendering and compositing stuff, I tend to add a little bit of blur to my images because they look too sharp in comparison. Another thing is not adding any kind of grain to the static images. If I'm adding a painting to a moving background image, where the background image is obviously film, it's made up of emulsion that's going to have a change of grain. You have to add noise to the painting element to mimic that [grain] so they both look consistent....It can also be major things—maybe just color [that's] off, or not matching whatever aerial perspective there is in the plate, [or]—if it was a particularly hazy day—not having enough haze in the [added] element.

MacAddict: Are there some special effects you can't figure out?

Eric Chauvin: Oh, yeah. When I first saw these time-slice things. [They were] all through *The Matrix.* But as soon as you saw it, you saw it everywhere, like in some of those Gap commercials...where things would just freeze, and the camera would dolly around it while the thing was actually frozen in time. I had no idea how those were done, so I called a friend of mine at ILM....It's actually a bunch of still cameras that are all on a curved rail, and they all fire at exactly the same time. Then they use some software to...stitch them all together and make them into one consecutive series of film.

MacAddict: There was a lot of talk when *The Phantom Menace* came out that something like 90 percent of it was special effects. Do you think there are too many special effects in movies?

Eric Chauvin: At the cost of...never working with ILM again, [I have to say] I hated *The Phantom Menace.* It was all fluff and no substance—it was just eye candy from beginning to end, and there's no story....The stuff that ILM did looked good, looked terrific. But it's...the analogy of putting earrings on a pig, you know? You can have all the effects you want, but it's not going to make it a good movie if there's no story. And that, to me, is...the wrong way to go.

Inside a Special Effect

One of Eric Chauvin's regular gigs is doing special effects shots and matte paintings for the *Voyager* series. The following is an example of a 3D matte painting Chauvin created of a mining scene from a recent episode. In a 3D matte painting, the camera actually moves through the environment rather than standing still. Here we dissect the scene and show you some of its individual elements.

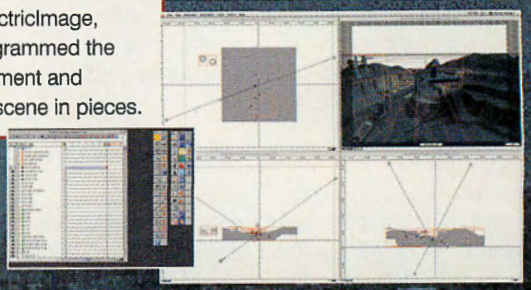


This is the original concept drawing that the special effects department of *Voyager* gave to Chauvin as a basis for this scene.

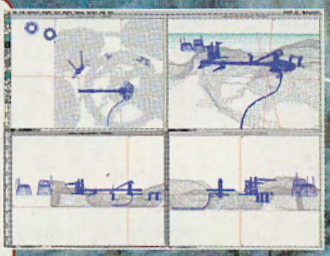
This picture from a photo CD became the basis of the background. Chauvin darkened the photo for nighttime and changed the contour of the mountains.



Chauvin brought the terrain model from CyberMesh and the structural models from formZ into ElectricImage, where he programmed the camera movement and rendered the scene in pieces.



Chauvin built all of the architectural elements using the 3D modeling program formZ. He brought a low-resolution version of the terrain from CyberMesh into formZ so he could get the dimensions of the structures correct.





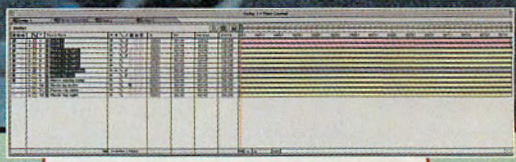
To create this cratered terrain, Chauvin created a gray-scale image in Photoshop and ran it through the CyberMesh plug-in, which creates a 3D model based on the value of the grays in the artwork. If an element is neutral gray, the program doesn't displace it; black will create craters, and white will create elevation.

Chauvin took a photo and of a rock and used it to add texture to the terrain.





Chauvin did some detail paint work on the rig, including these parallel segments, using Photoshop. According to Chauvin, elements in the foreground need to include more detail than elements in the back.



The final step was to bring all of the elements together in Adobe After Effects and composite the scene.

© PARAMOUNT PICTURES 2000

Cathy Lu and Robert Capps spent the past few months traveling in airplanes to talk to our Mac pros and can testify that there is no more leg room in coach.



SOMETIMES BUSINESS

IS ABOUT MOVING PRODUCT.

SOMETIMES IT'S ABOUT

MOVING THE CROWD.



CD-R

From the warehouse district to Wall Street, more professionals trust Imation™ CDs. Why? Probably because of Imation's nearly 50-year history in managing and storing data. In fact, all of our products are tested to exacting standards to withstand even the toughest environmental conditions. But then, our quality testing and customer service reputation have always been second to none. No matter what shape your business takes, you can count on Imation as a devoted leader in breaking new ground in technology solutions. For more information, call 888.222.2294 or visit www.imation.com/moving



CD-RW



Diskettes



DVD-RAM



SuperDisk™ diskettes

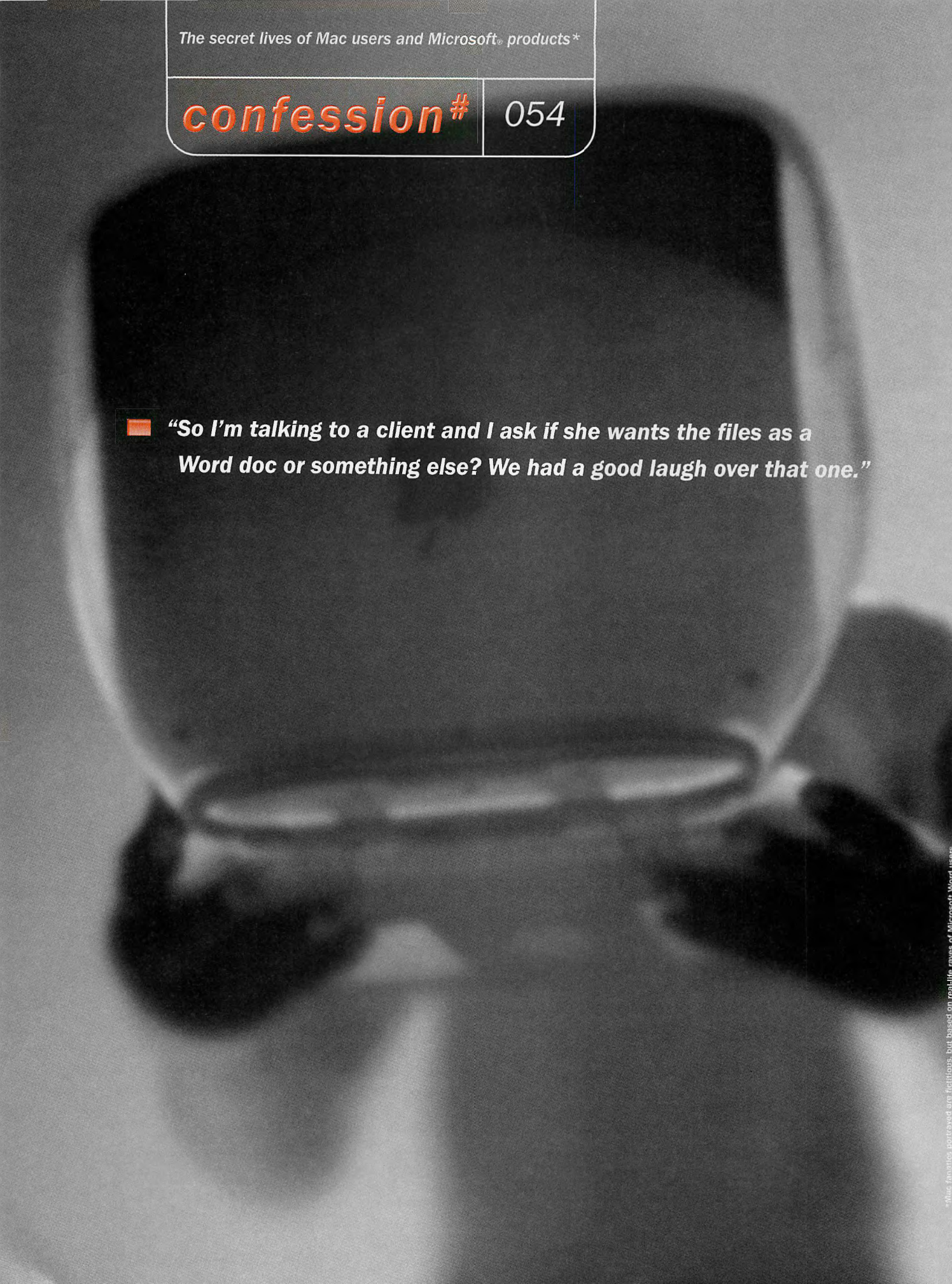
from desktop to data center

imation

imaginative solutions.

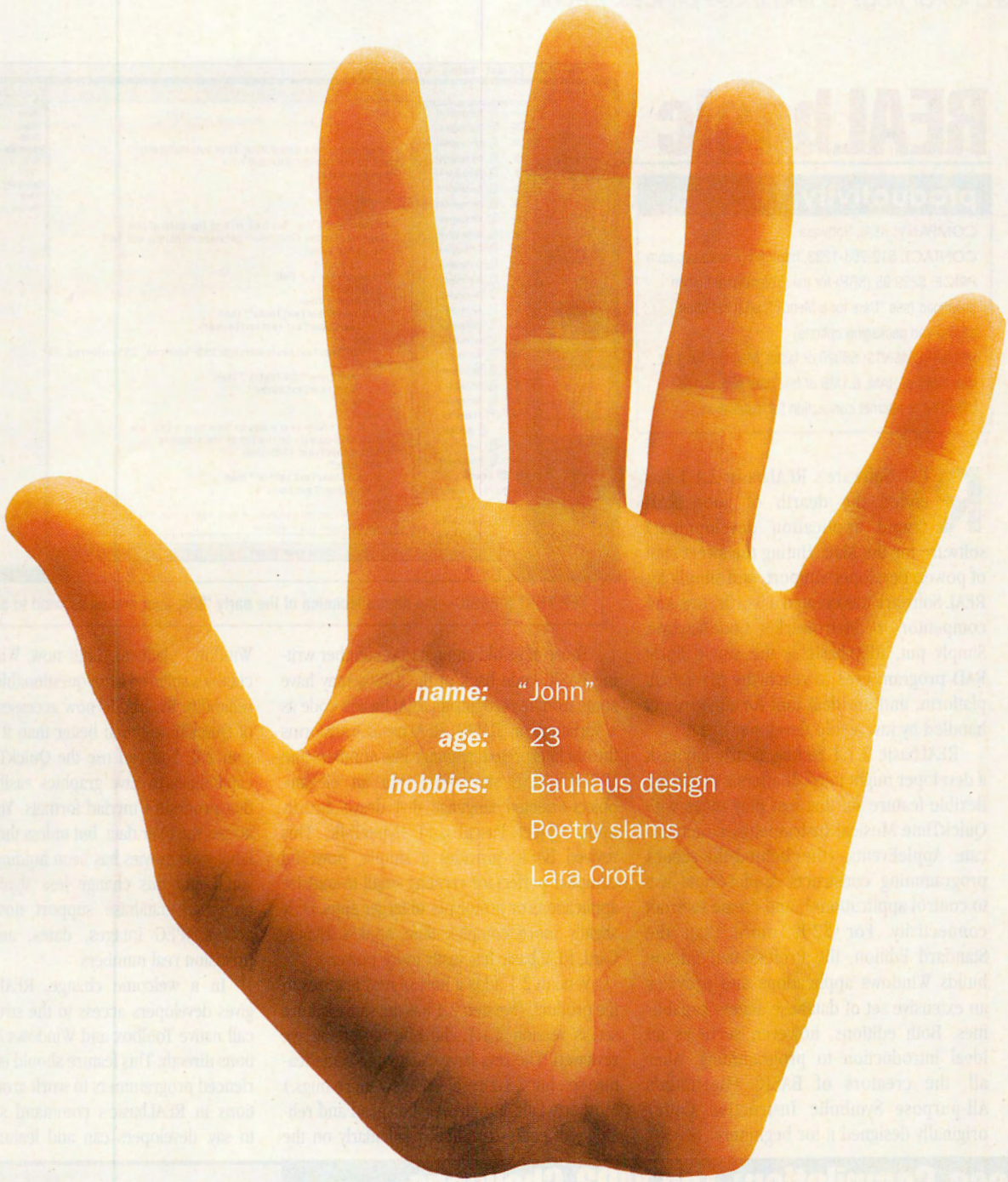
© 2000 Imation Corp. Imation, its logo and SuperDisk are trademarks of Imation Corp.

confession# 054



"So I'm talking to a client and I ask if she wants the files as a Word doc or something else? We had a good laugh over that one."

*Mac fanatics portrayed are fictitious, but based on real-life raves of Microsoft Word users.



Microsoft Word Macintosh Edition

Find out more—visit Mactopia at **microsoft.com/mac**

Microsoft

© 2000 Microsoft Corporation. All rights reserved. Microsoft is a registered trademark of Microsoft Corporation in the United States and/or other countries. Apple, Mac, and Macintosh are registered trademarks of Apple Computer, Inc.

reviews

We kiss a lot of frogs to find those princes. Blech!

FREAKIN' AWESOME!
The most valuable products, the coolest gizmos.

SPIFFY
A solid offering. Overall a good investment.

YEAH, WHATEVER
Neither recommended nor rejected. Some might like this, but we weren't impressed.

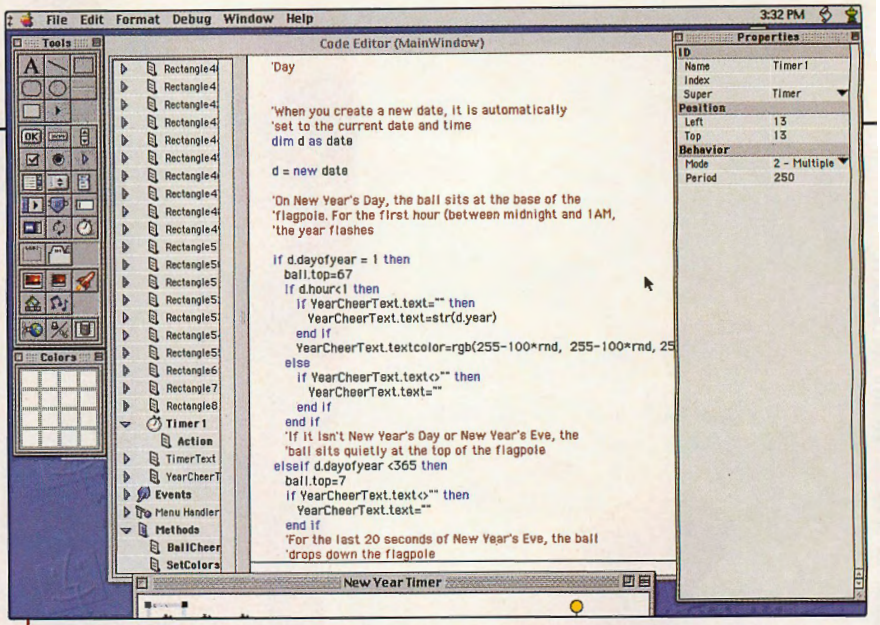
BLECH!
We want the time we spent testing this back.

JOIN THE BROUHAHA at http://www.macaddict.com/debate.

REALbasic

productivity

COMPANY: REAL Software
CONTACT: 512-263-1233, http://www.realbasic.com
PRICE: $299.95 (SRP) for the Professional Edition download (see "Care for a Menu?", p63, for other pricing and packaging options)
REQUIREMENTS: 68020 or faster, Mac OS 7.6.1 or later, 5MB of RAM, 6.1MB of free hard disk space, CD-ROM or Internet connection for installation



YEP, THAT'S BASIC—the lingua technica of the early '80s. Just makes us want to sing Culture Club.

REAL Software's REALbasic 2.1.1 has ended the dearth of good RAD (rapid application development) software for the Mac. Hitting the sweet spot of power, developer support, and simplicity, REAL Software has created a worthy low-end competitor to Metrowerk's CodeWarrior. Simply put, REALbasic is the single finest RAD program ever to reach the Macintosh platform, and an ideal tool for any project handled by just a solo developer.

REALbasic 2.1.1 tackles nearly any task a developer might need. It offers a powerful, flexible feature set that can play tunes with QuickTime Musical Instruments, communicate AppleEvents (the behind-the-scenes programming constructs AppleScripts use to control applications), and create Internet connectivity. For $200 more than the Standard Edition, the Professional Edition builds Windows applications and provides an extensive set of database access capabilities. Both editions, however, serve as an ideal introduction to programming. After all, the creators of BASIC (Beginner's All-purpose Symbolic Instruction Code) originally designed it for beginners.

Those of us old enough to remember writing BASIC code back in the 1980s may have some trouble recognizing REALbasic's code as a variation on BASIC. REALbasic transforms the old interpreted-language line numbers and IF-THEN-ELSE statements into an elegant, object-oriented language that draws heavily upon Object Pascal and HyperTalk. This revived BASIC provides a simple, powerful compiler perfect for creating small-to-midsize applications or prototypes of larger apps. Only slightly more complex than Apple's HyperCard, REALbasic has vastly more power.

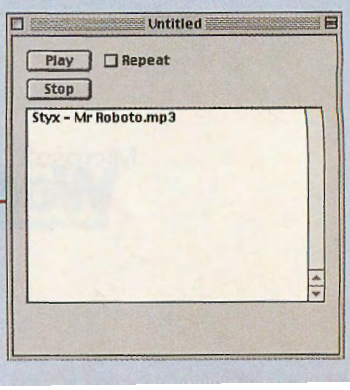
Version 2.1 adds a host of new features to the product. (Version 2.1 has the same feature set as version 2.1.1, the official version we reviewed. The revs have exactly the same feature set, but 2.1.1 resolved a few more bugs.) Most crucially, it improves the speed and reliability of code execution, particularly on the Windows platform. Until now, Windows executables suffered from questionable speed and reliability. RealBASIC now accesses the power of QuickTime much better than it did in version 2.0. You can use the QuickTime export capabilities to save graphics easily in any of that program's myriad formats. You can also access the User data, but unless the inability to label your movies has been holding you back, you'll find this change less significant. The improved database support now lets you access JPEG images, dates, and double-precision real numbers.

In a welcome change, REALbasic now gives developers access to the structures that call native Toolbox and Windows API instructions directly. This feature should enable experienced programmers to work around restrictions in REALbasic's command set—that is to say, developers can add features to their

Cross-Compilation: The MP3 Challenge

A well-written REALbasic application should run just as well on Windows as on the Mac OS. To test this, we decided to compile an MP3 player as a Windows 98 application. We showed you how to make this player in the May issue of *MacAddict* ("How to Build an MP3 player in REALbasic," May/00, p68).

REALbasic's new support for QuickTime and for sound on the Windows platform didn't disappoint us. Using Virtual PC, we confirmed that the MP3 player worked, except for a minor cosmetic glitch. If you plan to use REALbasic to rule both platforms, remember that Windows doesn't use the same ASCII character to represent the Mac-standard ellipses that appear at the end of many menu items.



THIS MAC-TO-WINDOWS MP3 player reflects the power of REALbasic, not our taste in music. We do own this track, by the way—no legal nasty-grams, please.

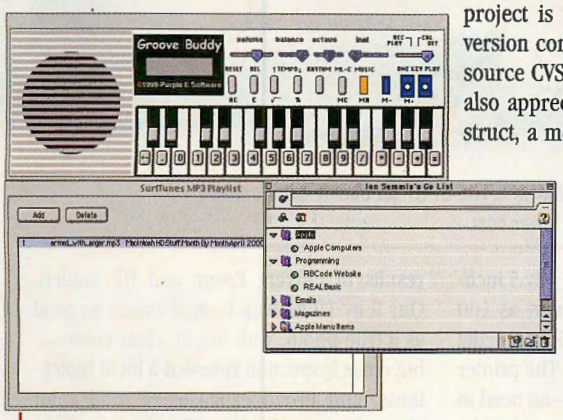
REALbasic applications that REAL Software hasn't actually built into the language.

Until now, Windows cross-compilation (the ability to create Windows programs directly from a Macintosh) was an afterthought in REALbasic. Version 2.1 remedies this weakness. Both platforms now support a host of features, including QuickTime and audio support. One perk of this enhancement is the ability to run REALbasic MP3 players. (For more information on cross-compilation, see "Cross-Compilation: The MP3 Challenge," p62.)

REALbasic's user interface has undergone a pleasant overhaul since version 2. The Code Editor windows now support live scrolling, which simplifies dealing with long, complex pieces of BASIC code. In REALbasic, you add code routines to controls, windows, and menus to make them do what you want. A progress bar now makes long compilations less tedious, though not any faster. Small icons added to nearly every menu item give the program a strongly distinctive look, and they stay out of the way as you're working.

If REALbasic has a flaw, it's that the program doesn't scale well to larger projects. It stores programs as single files—difficult for multiple developers to access simultaneously. Moreover, because a REALbasic project is a single enormous binary file, version control software such as the open-source CVS can't track changes. We would also appreciate support for an enum construct, a method for defining a large number of constants in one command. While you can create the same functionality by tediously defining constant after constant, an enum construct would offer a cleaner and easier way.

Fortunately, these flaws are irrelevant to REALbasic's primary audience. REALbasic provides an ideal way for a solo-flying programmer to develop small applications or front ends to databases and Internet services quickly and easily. This outstanding package deserves a place on the hard drive of any serious Mac hobbyist, developer, or system administrator.—*Ian Sammis*



IT'S BETTER THAN BAD—IT'S RAD. REALbasic 2.1.1 RAD software created this music synth, MP3 server, and URL organizer (SurfTunes and GrooveBuddy by Purple E Software, http://www.norcom2000.com/users/ejt/dl.html; GoWeb by Jose Cuevas, http://www.english.uprm.edu/ctk).

good news: Powerful. Simple. Elegant. Committed developer community.

bad news: Scales badly to very large projects. Debugging tools limited.

freakin' awesome!

REAL Appearances

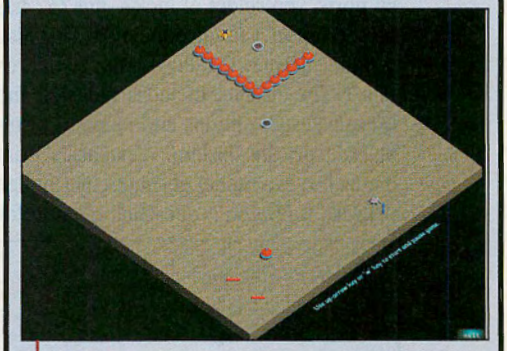
REALbasic programs have been turning up in the shareware and freeware market with increasing frequency in the last year or two, and they've even started to see some commercial use. Here are a few of the better-known REALbasic efforts out there. You can find all of these on REAL Software's Made With REALbasic page at http://www.realbasic.com/mwrb.

RICOCHET 3D—A 3D version of the oddly addictive Ricochet ($15, shareware).

PROJ EDIT, MONS EDIT, CORE EDIT—A collection of editors for Myth: The Fallen Lords (freeware).

GOWEB—A handy little URL palette (freeware).

UNIX CONSOLE—A tool to aid in Solaris system administration ($99, commercial).



RICOCHET 3D IS ONE of the more dramatic-looking REALbasic apps.

Care for a Menu?

REALbasic has one of the most complicated pricing schemes we've ever seen. Here's the complete list of options (educational discounts noted).

ENTREES

All entrées come with the application on CD-ROM and printed documentation.

REALbasic Standard Edition	$149.95 ($109.95 academic)
REALbasic Professional Edition	$349.95 ($229.95 academic)

A LA CARTE

REALbasic Standard Edition	$99.95 ($59.95 academic)
REALbasic Professional Edition	$299.95 ($179.95 academic)
Printed documentation	$39.95
CD-ROM (if you already own download)	$9.95

* Upgrade prices are also available; see http://www.realbasic.com for details.

in review

audio
T-RACKS 1.1.2 (PRODUCT CODE: 0815) p72

fun & games
BINGO•BINGO•BINGO (PRODUCT CODE: 0803) p67
WHO WANTS TO BE A MILLIONAIRE, SECOND EDITION (PRODUCT CODE: 0805) p73
CLAN LORD (PRODUCT CODE: 0804) p75
KAWASAKI ATV POWERSPORTS (PRODUCT CODE: 0802) p77

hardware
LEXMARK Z52 COLOR JETPRINTER (PRODUCT CODE: 0808) p64
APPOINTMENT 1.0 PERSONAL EDITION (PRODUCT CODE: 0813) p65
EPSON PHOTOPC 3000Z (PRODUCT CODE: 0809) p66
I-JAM IJ-101 (PRODUCT CODE: 0807) p69
EPSON STYLUS COLOR 670 (PRODUCT CODE: 0812) p78

multimedia
SITECAM 5.0.1 (PRODUCT CODE: 0814) p70

productivity
REALBASIC 2.1.1 (PRODUCT CODE: 0801) p62
NOW UP-TO-DATE & CONTACT 3.9 (PRODUCT CODE: 0816) p74
VIRTUAL PC 3.0 WITH RED HAT LINUX (PRODUCT CODE: 0817) p76

utilities
HARD DISK TOOLKIT 4.0 (PRODUCT CODE: 0818) p68

You can buy all products listed SeeMeBuyMe in this section through *MacAddict*'s partner, SeeMeBuyMe, a new shopping service. Point your browser to http://www.seemebuyme.com or call 888-220-1146. Use the product code printed to the left to reference the item you're looking for.

Lexmark Z52 Color Jetprinter

hardware

COMPANY: Lexmark
CONTACT: 888-539-6275, http://www.lexmark.com
PRICE: $179 (street)
REQUIREMENTS: Mac OS 8.6 or later, USB connection, USB cable



PHOTOGRAPH BY AARON LAUER

LEXMARK'S THE SPOT for quality color printing at a lower cost.

At a street price of just $179, Lexmark's first Mac-compatible printer, the Color Jetprinter Z52, stakes out the low end of the Mac inkjet market. While the printer's output does not quite match that of recent (and more expensive) Epson and Hewlett-Packard inkjets, it certainly comes close enough to satisfy anyone looking for bargain color printing.

Right out of the box, the Z52 feels a bit flimsier than other inkjet printers—for example, we found the door leading to the connector ports a bit difficult to open and close, though other components worked smoothly.

Installing the printer drivers from the bundled Mac CD-ROM was a cinch, and the USB connection worked without a hitch. (If you have an older Macs with serial ports, you're out of luck—the Z52 has no serial port.) In introducing its first Mac product, Lexmark follows Mac standards to a T. The installer includes Uninstall and Custom Install options and places a printer icon on the desktop. Lexmark's Print dialog box is a model of simplicity (though we wish it offered a one-click method for printing black text). The dialog's Layout section offers options for booklet and two-sided printing.

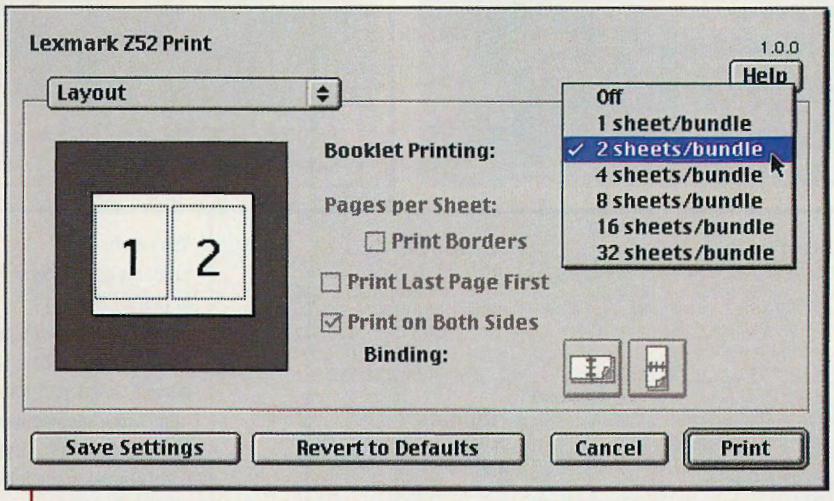
The Z52 worked smoothly. We never encountered a paper jam, even with sheets as small as 3 by 5 inches. The input tray can hold as many as 100 sheets of paper or 25 sheets of thicker media such as labels or transparencies. The printer handled envelopes with aplomb—no need to adjust a knob or lever for thicker materials, as with other printers we've tested.

Our benchmark single-spaced plain-text pages rolled out at a speedy 4.5 ppm. Color pages showed more-average times, with a full page of normal-quality color taking almost 3 minutes to process and a photo-quality 8 by 10 taking 10 minutes. In line with other inkjet printers, the Z52 prints fairly quietly, except for a very noisy initial ka-blam as each page feeds into the mechanism.

Using its standard ink cartridges, the Z52's highest-quality output on glossy photo paper doesn't quite measure up to the results of current Epson and HP models. Our 8 by 10 blowup looked almost as good as a true photo, with bright, clear colors—but close inspection revealed a bit of blotchiness, and broad expanses of solid color showed some banding. We also tested the optional $40 photo cartridge and got noticeably better results. You swap it in for the black cartridge, but Lexmark recommends a 2-minute, onscreen printer realignment every time you swap cartridges, a process which creates a bit of a hassle. To the naked eye, black-and-white text at the Normal setting looked sharp.

A simple control panel estimates remaining ink and offers one-click access to printer maintenance functions such as head cleaning and test-page printing. The paper manual covered most of our questions, but we had to resort to the CD-based Adobe Acrobat manual for Mac-specific questions. Though the Z52 gave us no problems, we called Lexmark's toll-free tech support and reached a live person in less than a minute. However, he was unfamiliar with standard Mac features such as the Desktop Printer icon.

While photo aficionados will want higher quality than the Z52 offers, those seeking good color printing at a bargain price will enjoy Lexmark's first Mac offering. *—Joseph O. Holmes*

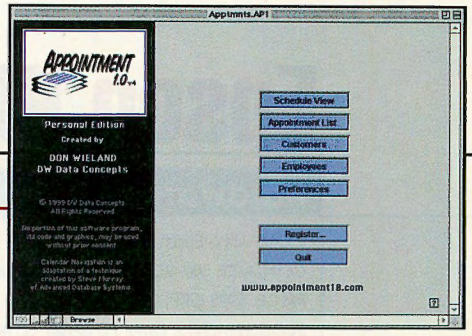


THE LEXMARK'S LAYOUT SETTINGS dialog box offers a variety of custom features, such as booklet and two-sided printing.

good news: Inexpensive. Good paper handling. Fast. Good color.
bad news: No serial port. Separate $40 ink cartridge required for best color. USB cable not included.



Appointment 1.0 Personal Edition



productivity

COMPANY: DW Data Concepts
CONTACT: 949-786-9318, http://www.appointment10.com
PRICE: $200 (SRP), $70 for FileMaker-dependent version
REQUIREMENTS: PowerPC processor or faster, Mac OS 7.6.1 or later, 16MB of RAM

FOR $200, WE EXPECT A SNAZZIER INTERFACE and a lot more functionality.

When we saw the program's mistyped icon name, we knew it was a bad sign. Billed as "a powerful multiuser scheduling application," DW Data Concepts' Appointment 1.0 Personal Edition is more awkward and less functional than many shareware apps.

Appointment is supposedly a contact scheduler, although it can't sync to a Palm and you have to wade through several cumbersome steps to record meetings. Multiple users can access the program but can't maintain separate calendars or contact lists. The Contacts file stores basic name and address information.

For $200, we expect the company to do its own coding. Instead, Appointment uses a run-time version of FileMaker Pro 4. If you have FileMaker Pro 4 or 5, you can get a FileMaker-dependent version for $70.

Appointment's clumsy and inefficient interface distinctly underwhelmed us. The program's five windows all stay open atop one another, all the time. The only way to manage them is to move them manually. If you want to set up an appointment with someone who's already in the Contacts file, you can't actually type any information into the text fields; instead, you have to press buttons to select meeting participants from a list of names.

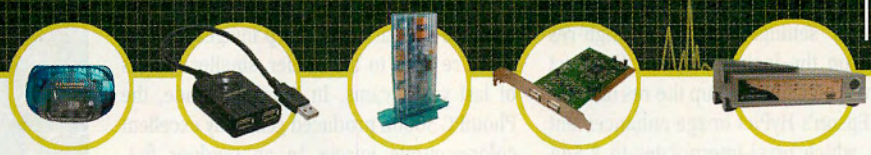
Appointment sports a number of embarrassing grammatical errors (for example, *appointment's* instead of *appointments*) and ineptly written dialog boxes. It has no documentation and offers scant online help.

Appointment 1.0 is an expensive turkey. If you need some good scheduling software, skip this gobbler and get yourself a *real* program.—*Mark D. Shuchat-Marx*

good news: None.
bad news: Outrageous price. Clunky interface. No documentation. Awful online help.



MiniView™
USB KVM CONNECTIVITY



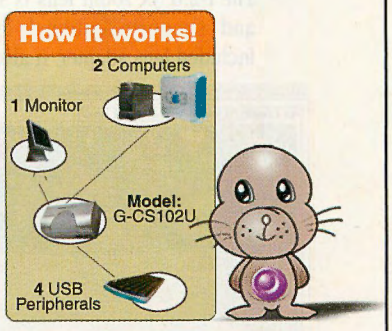
IOGEAR
www.iogear.com

Control Macs and PCs with a single mouse, keyboard, and monitor!



Our two-port MiniView™ USB allows two computers to share a monitor and four USB devices. Combine two PCs, two Macs or one of each! The MiniView™ USB is complimented with IOGEAR's patented Video Signal Enhancement technology, which provides ultra-high resolution. Use it with your mouse, keyboard, scanner... anything with USB!

visit our website for more exciting connectivity products.



www.iogear.com/macaddict

3 YEAR WARRANTY

Customers outside the U.S. can contact us at (949) 250-1260. Toll Free: 1-888-999-2836 email: sales@iogear.com

Epson PhotoPC 3000Z

hardware

COMPANY: Epson America
CONTACT: 800-463-7766, http://www.epson.com
PRICE: $995 (SRP)
REQUIREMENTS: Power PC (serial), G3 or faster (USB), System 7.5 or higher (serial), Mac OS 8.5.1 or later (USB), 64MB of RAM,150MB of free hard disk space



PHOTOGRAPH BY AARON LAUER

IMAGE IS EVERYTHING. The well-designed Epson PhotoPC 3000Z is a top pick among 3.3-megapixel digicams.

Beauty should not be skin deep—but to see the Epson PhotoPC 3000Z is to want it. The cute, compact 3000Z (notice how camera numbers are starting to resemble sports car models?) is also extremely full-featured, capable of producing good-looking 3.3-megapixel digital stills as well as video and audio clips.

Like the other 3-to-4-megapixel digicams released recently—including the Toshiba PDR-M70, the Olympus C-3030, and the Nikon Coolpix 9090—the PhotoPC 3000Z gives you incredible, high-resolution pictures for much less than you'd have paid a year ago. The standard 2,048 by 1,536 image yields 3.3-megapixel files that take up about 450K at the default in-camera JPEG compression settings. About 30 high-res images fit on the included 16MB Compact Flash card. You can bump up the res in-camera with Epson's HyPict image enhancement program, which pixel-interpolates to 2,544 by 1,904, or nearly 5 megapixels. HyPict images produce sharp 8-by-10-inch prints at about 250 dpi, or 12-by-17-inch prints at about 150 dpi.

The camera itself comes well equipped. The f-2.0 3X zoom lens is sharp and quiet, and supports optional lenses with the included lens adapter. It also has a hot shoe for an external flash. The autofocus is center-weighted by default (with additional focus modes available), and locks in more quickly than some we've tried. The clear and bright 1.8-inch LCD screen offers vivid colors and a fast refresh rate, and the optical viewfinder has a diopter adjuster to focus the viewfinder for your eyes.

Shooting with this digicam is a pleasure. It fits the hand well and puts buttons where they should be, though people with larger hands may find some of the controls a bit small. You may initially have trouble locating the shutter button in quick-shooting situations, as it lies flush with the top of the camera.

A camera capable of this resolution can produce spectacularly sharp images, at least if you're used to the fuzzier, smaller images of last year's cams. In full auto mode, the PhotoPC 3000Z produced generally excellent color-accurate images in an outdoor flat-light situation, with slightly desaturated flesh tones. It also rendered good color quality and more accurate flesh tones in a much tougher indoor fluorescent environment.

Even with the wealth of high-end features—including sports, landscape, and portrait program modes; full manual for aperture or shutter priority; adjustable white balance; variable focus weighting; several flash modes; and panoramic, monochrome, and uncompressed TIFF images—you can easily access most settings, usually with the press of a single button on the user-friendly menu system. Occasionally we found the LCD screen, which guides you through the settings, hard to read against a background image. The Epson software worked flawlessly with our iMac; images downloaded automatically and quickly through the USB connection as soon as we ran the app.

The PhotoPC 3000Z incorporates some of the best qualities of a video camera as well. You can grab 25-second, M-JPEG, Web-friendly video clips (320 by 240, 15 fps), or annotate your still shots with 10 seconds of audio. The camera does take a while to prepare for recording movies, so think ahead in fast-moving video situations.



THIS FLOWER'S GOT POWER. Shot in flat, early-morning light in full auto-macro mode, the 3000Z's 3.3-megapixel resolution and good color fidelity yielded a sharp image.

While the Epson PhotoPC 3000Z isn't the cheapest of the 3.3-megapixel crop, it is one of the most full-featured devices. Its high-resolution pictures are more than adequate for any but the highest-end professional use. Add video and audio recording, complete mode controls, and an attractive design, and you've got one of the most versatile digicams available—one we highly recommend.—*Miriam Anzovin*



BASIC BUT FUNCTIONAL, the included software downloads images from the camera into any TWAIN-compliant application.

good news: High pixel count. Packed with features. Compact and well designed.
bad news: Some buttons are slightly small for larger fingers.

freakin' awesome!

Bingo • Bingo • Bingo

fun & games

COMPANY: MacSoft
CONTACT: 612-249-7600 or 800-229-2714, http://www.wizworks.com/macsoft
PRICE: $19.99 (SRP)
REQUIREMENTS: PowerPC 100MHz or faster, Mac OS 7.6 or later, 16MB of RAM, 15MB of free hard disk space (115MB recommended), CD-ROM, thousands of colors

YEAH, BABY!!! This is bingo at its best. Unfortunately, the best isn't all that exciting.



No matter how you skin it, even multiplayer, multilevel Bingo is just, well, Bingo. So unless you're already an avid player, Bingo•Bingo•Bingo won't hold your attention for very long.

With its polished interface and pinball-style sound effects, Bingo•Bingo•Bingo contains about 100 different winning patterns. The variety of boards, player options, and speed settings can make the game absurdly easy or quite difficult. Set the game to mark the card and call "Bingo!" for you. Or you can play on up to six cards at once, against as many as 100 computer opponents. Crank up the speed, and you've got a real test of hand-eye coordination. Do resist the urge to take on the whole hall, though, as Bingo becomes curiously difficult when you play against too many opponents.

And is a Mac game really a game without multiplayer functionality? Clicking the Internet Bingo button brings you out of the program and to the BingoStop.com Web site (http://www.bingostop.com), where you can chat with other players and play Bingo for fun and prizes. (Hint: Aggressive, Unreal-style chat alienates the nice folks.) Keno and Solitaire also come bundled on the CD.

MacSoft did a thorough job of bringing this classic game to the Mac, but once the novelty wears off, you're no more likely to play it than to visit a real-life Bingo hall.
—Narasu "Punk Spice" Rebbapragada

good news: Polished interface. 100 different Bingo cards. **bad news:** Novelty wears off fast. Hard to win. Lame Web-based multiplayer.

yeah, whatever

TRYING TO CONNECT PCs AND MACs? THERE'S A BETTER WAY.

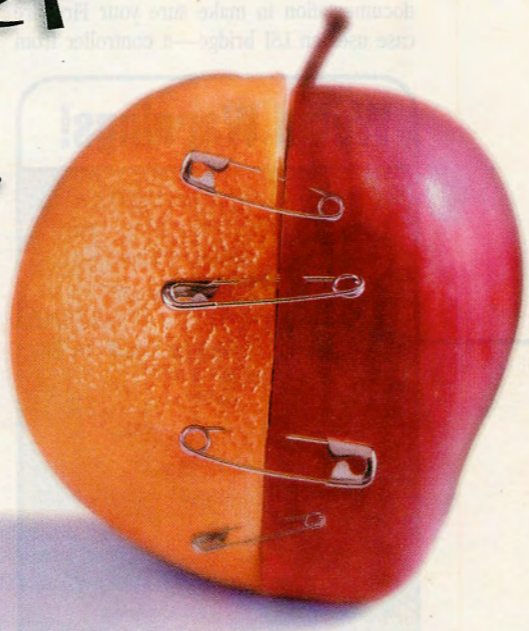
PC MACLAN for Windows NT/2000 or 95/98!



PCs and Macs are as different as apples and oranges. But with PC MACLAN you won't just compare them — you'll connect them!

Lose the safety-pin solutions. Use PC MACLAN and you'll be sharing files, drives and printers over the same seamless network — quickly and easily.

And with three file-compatibility utilities included, your cross-platform connectivity solution is complete.



Miramar Systems

Macworld 1/2

1999 winner macworld eddys

Connect with PC MACLAN! For details go to **www.miramarsys.com/ma.htm** or call 877.462-2272.

Hard Disk Toolkit 4.0

utilities

COMPANY: FWB Software
CONTACT: 800-656-4256 or 415-345-4300, http://www.fwb.com
PRICE: $129.95 (SRP), $49.95 CD upgrade, $44.95 downloadable upgrade
REQUIREMENTS: Power Macintosh, Mac OS 8.1 or later (8.5 for FireWire support), 8MB of RAM (128MB recommended), 11MB of free hard disk space, CD-ROM

No hardware-fiddling Mac type should lack FWB's outstanding Hard Disk Toolkit. It provides Mac OS drivers for nearly every hard drive and magnetic removable storage device on the market, so you can buy almost any device without worrying about Mac compatibility. Ever since the HFS+ (also called Mac OS Extended Format) file system appeared with Mac OS 8.1, though, Hard Disk Toolkit has been scrambling to stay current with rapidly changing Macintosh hardware and software. With version 4.0, FWB has finally caught up all the way.

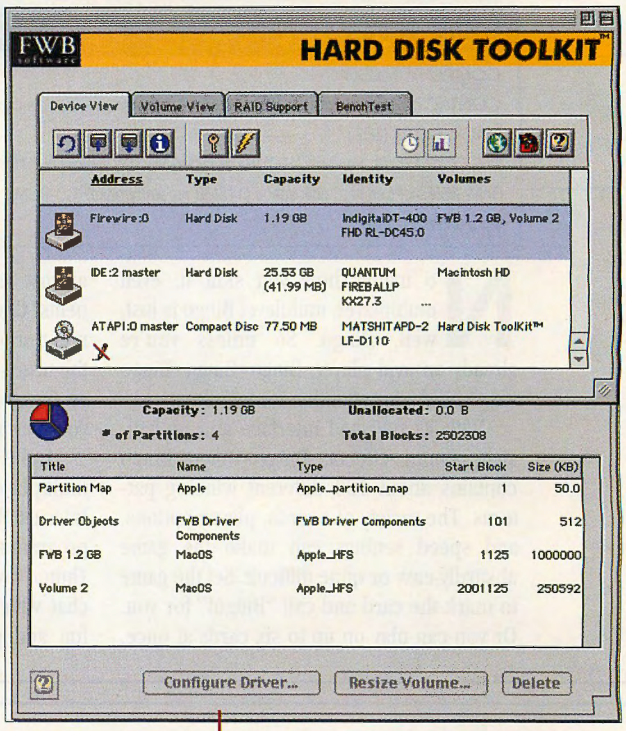
Hard Disk Toolkit's strongest benefit is the vast, almost ludicrous array of devices it supports. With version 4.0, it has added FireWire to that list. We successfully mounted an old Seagate drive through a generic FireWire disk case. If you want to try this at home, check the documentation to make sure your FireWire case uses an LSI bridge—a controller from LSI Logic (http://www.lsilogic.com) that allows you to place IDE devices on a FireWire bus. If so, Hard Disk Toolkit should support the drive without any problem. Also as in the previous version, Hard Disk Toolkit lets you create and use RAID arrays in software without a hardware RAID controller.

FWB has completely redone Hard Disk Toolkit 3.0's unbelievably sluggish startup tests. The new test takes a tiny fraction of the time it did formerly—it uses a clever feature of newer devices called SMART (Self-Monitoring And Reporting Technology). SMART drives, mostly manufactured after 1998, can monitor themselves for incipient hardware failures and report problems to the system.

Many of version 4.0's new features—compatibility with Mac OS 9, iMacs, iBooks, G4s, and Atapi Zip drives—simply keep the program up to date with the many changes the Macintosh world has seen since Hard Disk Toolkit 3.0 shipped in November 1998. You can now resize HFS+ partitions nondestructively. This feature is crucial for junkies of multiple operating systems, as it lets these users carve new partitions out of existing drives without doing a full backup and restore. We still recommend doing a backup, however. Mucking around with the partition table always makes us a bit jittery.

A few disappointments do lurk in Hard Disk Toolkit 4.0. You can only create three types of partitions—HFS, HFS+, and LinuxPPC—without laboriously typing in a partition type by hand. This compares unfavorably even with Apple's Drive Setup, which supports automatic creation of many Unix and other partition types. The documentation shows signs of hasty editing—for example, a picture of a dialog box doesn't match the one in the final program. We also couldn't corroborate the manual's claim that a device test will reveal whether a drive supports SMART. We ran the test, but saw no reference to SMART. Inexplicably, the online help doesn't rely on the familiar Help menu, and you can only access it through buttons in windows.

Still, FWB's Hard Disk Toolkit 4.0 is a worthy successor to the outstanding line of hard disk utilities. We look forward to seeing how FWB meets its next, and arguably most difficult, challenge: Mac OS X support.—*Ian Sammis*



THANKS TO THE NEW FEATURES of Hard Disk Toolkit 4.0, we reduced this HFS+ partition without losing its contents, all on a FireWire-connected drive.

Weird Warnings!

The read-me file that accompanies Hard Disk Toolkit 4.0 includes some of the strangest warnings we've seen yet. If these situations apply to you, stop and reconsider what you're trying to do. Here are a couple of our favorites.

Regarding PowerBooks with RAID Partitions

"Do not dock a PowerBook to a computer in SCSI disk mode, then create an array from the PowerBook disk and any other drive connected to the computer. It doesn't work (it causes the system to hang)."

Regarding Limitations on the Number of Volumes You Can Mount on FireWire Drives

"We have experienced problems creating more than 45 volumes on FireWire drives. We recommend limiting the number of partitions on these drives to less than 20 at any given time."

good news: Extremely broad device support. Support for FireWire.
bad news: Only lets you create three partition types easily. Limited paper documentation.



I-JAM IJ-101

hardware

COMPANY: I-JAM Multimedia LLC
CONTACT: 888-326-4526, http://www.ijamworld.com
PRICE: $269 (SRP)
REQUIREMENTS: Mac OS 8.5.1 or later, 32MB of memory, 50MB of free hard disk space, USB connection, CD-ROM



THIS TOUGH LITTLE UNIT has an organic appeal, but a fairly weedy and dim LCD display.

PHOTOGRAPH BY AARON LAUER

The I-JAM portable MP3 player has some slick features, including USB support, removable storage, drag-and-drop MP3 management, and a Mac-friendly design. Ultimately, though, it's just too expensive and too underpowered.

This device plays MP3 tracks off a SanDisk Smart Media card that downloads MP3 files via a USB cradle from your Mac. Storing tracks on tiny inch-long wafers makes managing your music collection easier, but it's costly for truly useful capacities ($60 for 32MB cards and $125 for 64MB cards).

The compact iJam boasts considerable power (a maximum output of 60 megawatts or 16 ohms) and a full-featured graphic equalizer. However, horrible reception hampers the built-in FM radio feature. The unit does come with two 16MB SanDisk SmartMedia wafers, but each can harbor only three or four CD-quality songs.

The included software makes it simple to use the I-JAM. With the USB cradle drivers installed, the SanDisk media appears as an untitled DOS disk on your desktop; you can drag and drop MP3s onto this disk. As of press time, however, you'll need to upgrade to OS 9.04 to use this feature if you're an OS 9 user. I-JAM says it's working on a fix for OS 9.0.

Ease of use almost saves the I-JAM, but its high price, combined with its inadequate memory, relegate this device to the minor leagues.—*Frank O'Connor*

good news: Easy drag-and-drop file transfer. **bad news:** Poor radio. Low included storage capacity. High price.



Host and administrate hundreds of web sites on one dedicated machine, all via your browser!

ALPHA NETWORK

First in Dedicated Servers and Server Colocation

Toll Free 877-393-HOST

www.alphanetwork.com

Colocation w/ 25 Gigs BW & 1 IP @ $150 Mo.
Cobalt RaQ w/ 50 Gigs BW & 1 IP @ $200 Mo.
Alpha Control Panel, Free Unlimited Support & More



We Offer Far More For Less!

http://mac.astrohosting.com

Astro Hosting

Quality, Full Featured Hosting That's Inexpensive

Free Setup for Domain Transfers to Astro 75 and Astro 150 Accounts

Web Site Hosting $6.95 Per Month

Control Panel
Web based e-mail
30 MB of Space
5 POP e-mail Accounts
Unlimited e-mail Forwarding
FrontPage Extensions
2 Gigs of Bandwidth
Email Auto Responder
24/7 FTP Account Access
Server Log Files
Browser Based File Editing
Real & Quicktime Streaming
CGI-BIN, Scripts & Perl Check
PHP & mySQL

QuickTime Streaming Server

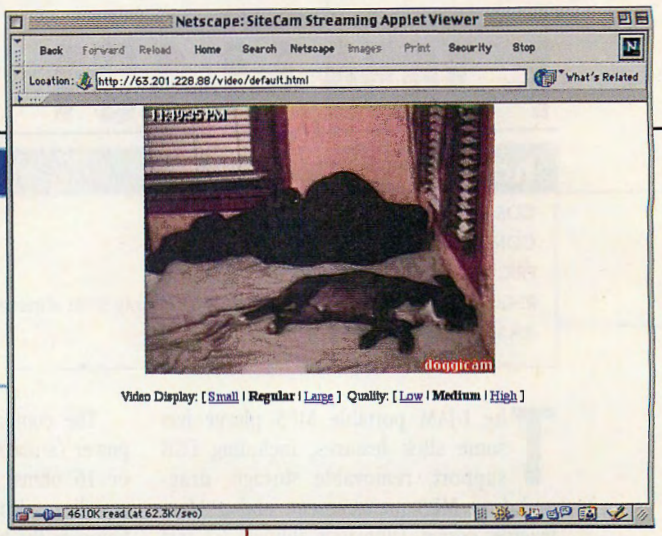
web site design and development available

http://mac.astrohosting.com

SiteCam 5.0.1

multimedia

COMPANY: NuSpectra
CONTACT: 510-523-2267, http://www.nuspectra.com
PRICE: $149 (SRP), $99 (educational)
REQUIREMENTS: PowerPC or faster, Mac OS 8 or later, 32MB of RAM, 10MB of free hard disk space, AV-capable Mac, Internet access (static IP, high-speed DSL or ISDN for streaming audio/video), QuickTime 2.5 or later



AWWW....Now you can watch the dogs play, sleep—or thrash the house.

FIND A TRIAL of SiteCam 5.0.1 on The Disc.

Admit it, you want to be the next JenniCam. All it takes is a Webcam, lots of bandwidth, and the right software. With all the fuss the industry's making over streaming QuickTime, it's easy to miss other options such as NuSpectra's SiteCam. Version 5.0.1 marks the company's merger with SiteCam's creators, Rearden Technology, and the addition of streaming audio support. Most important, SiteCam now supports USB and FireWire cameras. With these interfaces, SiteCam is more plug-and-playable than ever.

Streaming your video over the Internet is no small order. In addition to massive bandwidth—still a necessity—streaming video formerly required advanced server technology, tricky Web coding, and a browser plug-in some folks still don't have. SiteCam generates all the necessary code to dole out a video feed—no plug-in required. The SiteCam app has built-in server functionality, so you won't need a dedicated server, either.

Without actually streaming QuickTime, SiteCam uses it to create time-lapse movies from captured stills. You can archive and view QuickTime MOV files online. SiteCam's proprietary Document Model produces the stream itself, evaluating users' browser and bandwidth capabilities and delivering video at the appropriate size and frame rate. Using either Netscape's server-push technology or a series of Java applets, SiteCam serves up anything from streaming video to time-lapse image sequences. Users behind a firewall that blocks dynamic formats can still access image sequences by manually reloading the page.

To serve a video stream or still images to the Internet, you can use SiteCam's integrated Web server to serve a basic Web site off your own Mac, or link to local SiteCam documents from a remotely hosted site. You'll have to resort to plan B if your site uses any advanced technologies such as plug-ins or CGI scripts—SiteCam's server is HTTP-only.

Even SiteCam can't free you from bandwidth constraints. Unless you're leasing a good chunk of the Internet (such as a 1.5-MBps T-1 connection) or you upgrade to NuSpectra's pricey Proxy Server, you'll have a severely limited potential audience. NuSpectra provides this handy, albeit depressing, bandwidth equation: *bandwidth is equal to number of simultaneous users, multiplied by frame rate, multiplied by image size*. Your 350K DSL pipe serving a 1-fps sequence of 35K images will max out at ten viewers. Compromising image size and quality increases the number of users.

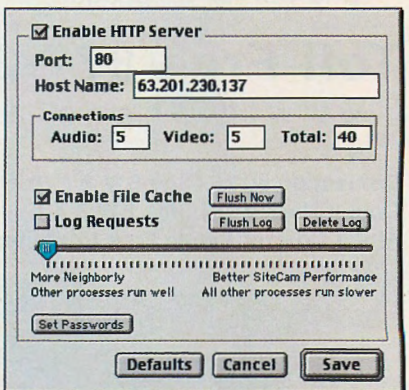
Still, SiteCam has a lot to offer even bandwidth-challenged users. If you use a basic dial-in account, Periodic Capture mode snaps images at any time interval you choose. SiteCam's built-in FTP client and AppleScript support take care of dialing in and uploading images to your Web host's server.

Alternatively, just skip the Internet altogether and use SiteCam as a security camera. In Motion Detection mode, SiteCam senses any change in the camera's field of view, captures the image, and saves it with a time-stamp. Paranoid? If you have the hardware and bandwidth, SiteCam can support up to five cameras simultaneously.

SiteCam 5.0 takes some of the pain out of streaming video, letting home users share themselves over the Internet. What you share, however, is up to you.—*Niko Coucouvanis*

good news: Look, Ma, no plug-ins. Full-featured Webcam server. Easy setup. Instant child care (er, pet care).
bad news: Skimpy manual. Quickly saturates a high-speed connection. Unstable on some systems.





DON'T KNOW YOUR IP ADDRESS? Click Defaults, and SiteCam's HTTP server fished it out of your TCP/IP settings—nice if you're on a dynamic IP.

Try Before You Buy

We must throw in this little caveat: SiteCam may not play well with some systems. On a blue-and-white G3 running Mac OS 9, a four-year-old Miro DC-20 digitizer, and a dynamic IP DSL line (the most likely culprit), SiteCam worked fine until we quit and relaunched the program. No amount of tinkering could stop a full system crash every time we tried to reopen a saved SiteCam document (yes, we kept the same IP connection alive). SiteCam rocked on a G3-ified 7300 running Mac OS 8.6 with Connectix QuickCam and static IP. The moral of the story: Try the free SiteCam demo, available on The Disc or at http://www.nuspectra.com.



Knees Banging Your Chin?

Bending your head over the handlebars and shouting out "Vroom, Vroom" won't move you any faster — or get you any closer to your dream job.

Our clients value the time we spend getting to know you, your skills, and your goals, so that HireKnowledge associates are uniquely positioned ahead of the others as qualified, tested, guaranteed candidates.

Whether you're looking for more challenging contract work — and more of it — or a permanent position that makes the most of your unique talents, we can get you there.

Visit www.hireknowledge.com or call 800-937-3622.

HireKnowledge. Putting Intelligence to Work.

HireKnowledge®

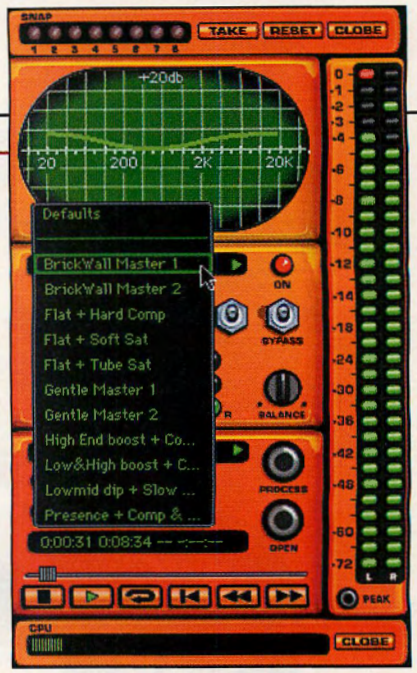
Specialized Staffing Solutions

Baltimore • Boston • Chicago • Dallas • New York • Philadelphia • Providence • San Francisco • St. Louis • Washington, DC

T-RackS 1.1.2

audio

COMPANY: IK Multimedia
CONTACT: http://www.t-racks.com
PRICE: $299 (SRP)
REQUIREMENTS: Power Mac 603e (180MHz) or faster, Mac OS 7.5 or later, 32MB of RAM, 10MB of free hard disk space (60MB recommended)



MASTER FROM SCRATCH or roll out a T-RackS preset to get yourself started.

FIND A DEMO of T-RackS 1.1.2 on The Disc.

There's something to be said for teeny-boppers who drive pop drivel up the charts. You may find 'N Sync's songs mediocre at best, but the sound emanating from your speakers is as sonic as it comes. How is this possible? Mastering.

The final step in the audio recording process, mastering can make recordings sizzle by compressing sound levels, maximizing the audio threshold, widening the stereo field, and sweetening the equalization. Unlike other audio recording and sequencing packages, T-RackS provides the mastering tools you need to give your recordings pro-quality sound. It polished up our songs, though not as completely as we had hoped.

Designed with old-school attitude, T-RackS gets points for its realistic analog interface. It features a six-band parametric equalizer (EQ), a compressor, and a limiter, and almost lives up to its claim of mastering with the warmth of analog processors. We tested a number of songs with real guitars and drums recorded digitally on ADATs. We hate the bland guitar tones ADAT produces, so we used T-RackS to add life to our mixes. The program features a default mastering setting, plus 11 presets to get you started. After powering up the compressor, we pressed the play button and went to work.

We found the compressor incredibly smooth. One song opens with a clean guitar intro followed by heavy guitars and drums. After making adjustments, we leveled the volume of the drumbeats and guitars and got the transitions to sound even. The compressor also brought our vocalist into a more even range against some wieldy keyboard licks. We like the stereo enhancement knob, which made our guitar tracks fuller.

The EQ offers high-pass, low-pass, and four bands of parametric EQ (two shelving, two peak). While it did a decent job of bringing some EQ frequencies into play, we wanted more control over the bandwidth to attenuate others. We found the shelving (the predefined frequency plateau surrounding a given frequency) a bit wide in certain situations—we had trouble notching some frequencies to fatten up our drums and bring better tone to the guitars simultaneously. We didn't get the warm analog sound we wanted, but we did get better-sounding, more consistent audio. We mastered a few computer-recorded MIDI pieces, and the EQ fared much better with these types of recordings.

Next we powered up the limiter and dumped gain into the Input Drive, hoping to get that big sound. We got it, but couldn't adjust the band frequencies. This component squashes peaks, bringing the audio level of your song up to its fullest gain potential, and it does a decent job. It also made our vocalist's breathing a little too noticeable in one part.

T-RackS features real-time processing that lets you change mastering settings on the fly. We made adjustments with the processors to different parts of a song, took a snapshot of each setting from the Snap window, and then mastered the song, selecting the corresponding snapshot for each part as it played.

If you've got audio tracks to boot, T-RackS is a great tool for sonifying your sound and a wonderful complement to any audio recording package. It may not completely put the warmth back into digitally recorded analog instruments, but it certainly makes everything sound a lot better.—*Kris Fong*

good news: Smooth compressor. Classic interface. Real-time processing.
bad news: Not enough EQ control. Program doesn't let you adjust the limiter's frequency bands.



WHAT DOES THIS LITTLE KNOB DO? The Help function displays graphical info that sheds some light.



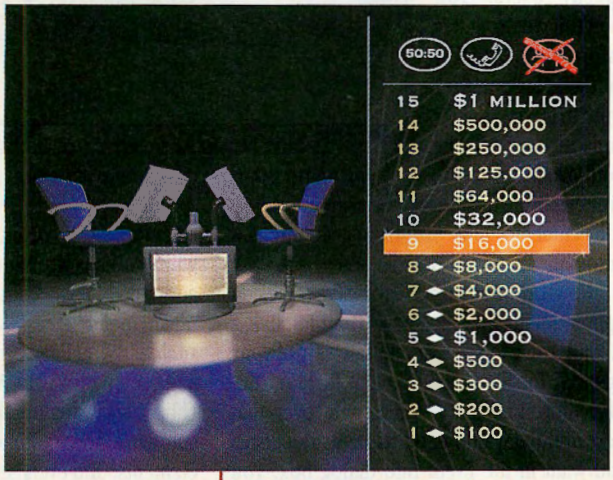
CLEAN OUT THE WAX and make sure your ears pay attention when you're tweaking frequencies in the EQ.

Who Wants to Be a Millionaire, 2nd Edition

fun & games

COMPANY: BuenaVista Interactive
CONTACT: 888-782-4185 or 818-553-5000, http://www.bvinteractive.com
PRICE: $19.99 (SRP)
REQUIREMENTS: G3 or faster, Mac OS 8.1 or later, 32MB of RAM, 200MB of free hard disk space, 24X CD-ROM

The phenomenon known as *Who Wants to Be a Millionaire* has finally made its way to the Mac—and it's more tantalizing to play on-screen than you might think. Based on the TV game show of the same name, the game's first edition is the top-selling PC game in 2000 to date. It's not hard to see why. The drive to become a millionaire—if only with virtual money—can be quite powerful.



WE HAVEN'T REACHED A MILLION—yet. We'll keep trying.

The game's developers did an admirable job of preserving the feel of the ABC TV show in which Regis Philbin asks up to 15 multiple-choice questions. With each correct answer, contestants move closer to millionaire status. The game comes complete with music, set, and Regis's voice (thank god for mute buttons). As on the show, the three lifelines (50/50, Phone A Friend, and Ask The Audience) are genuinely useful. In the virtual version of Phone A Friend, you can't call your own buddies, but you can contact a "friend" of Regis—for instance, his mechanic—who often knows enough to help you out. Ask The Audience, the coolest option, gives you the results of a poll of 50 real-life people, so you actually get statistically valid results.

Several people can compete for a spot in the hot seat using the Fastest Finger option, which asks you to put four answers to a list-based question in sequential order. Players tap a key when the right sequence appears onscreen. Unfortunately, if no one answers correctly (a distinct possibility, since the questions can be difficult), the game sometimes quits. Another annoyance is that questions repeat *just* often enough to take some of the challenge out of the game. However, you may find this a saving grace, as the questions, especially above the $32,000 mark, can reach a horrendously difficult level. Anyone know what a three-star general is called? (Please don't write to us if you do.)

In the end, the mark of a good game is that you want to play until it drives you insane. On that front, Who Wants to Be a Millionaire succeeds in a big way.—*Cathy Lu*

good news: Fun, addictive, *and* intelligent. Refreshing lack of bloodshed.
bad news: Occasionally repeated questions. Game sometimes quits randomly during the Fastest Finger round. Regis can grate.



Accessorize your Mac and be *QUICK* about it.


2.5" Harddrive


3.5" MO, Zip™, Jaz™, Orb Drive


3.5" Harddrive

CardBus


Introducing 2nd Wave's Fireline
FireWire peripherals for your Mac
- 2.5" Hard drive
- 3.5" Hard drive
- 3.5" MO, Zip™, Jaz™, Orb Drive
- CardBus - FireWire for PowerBook
- PCI card - FireWire for G3/G4

Creative Macintosh Solutions by
2nd Wave TECHNOLOGIES

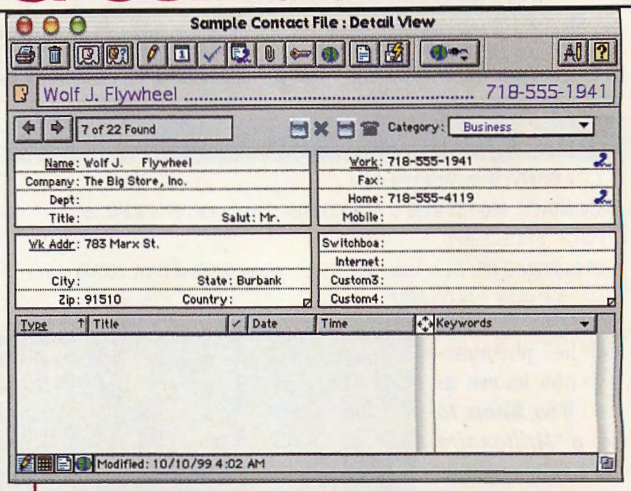

ADBee SCUSBee USBeeHUB SerialBee

Come see us at MacWorld **booth # 138**
www.2ndwave.com

Now Up-to-Date & Contact 3.9

productivity

COMPANY: Power On Software
CONTACT: 800-344-9160 or 614-413-4000, http://www.poweronsoftware.com
PRICE: $89.95 (SRP), $39.95 upgrade
REQUIREMENTS: 68030 Mac or faster, System 7.1 or higher, 16MB of RAM, 5MB of free hard disk space (10MB recommended)
REQUIREMENTS FOR PALM SYNCHRONIZATION: Palm OS 3 or higher, Palm Desktop 2 or higher



ENTERING INFORMATION in Now Contact is a simple process.



FIND A DEMO of Now Up-to-Date 3.9 on The Disc.

Historically, the Mac has always lacked good personal information management software. Historically, Mac versions of Microsoft Outlook is inferior to its Windows counterpart. How times have changed! Last year, Power On Software acquired the Up-to-Date and Contact applications from Qualcomm, spruced them up, and released them together as Now Up-to-Date & Contact. Power On has done a terrific job of making the package useful and powerful while retaining its ease of use.

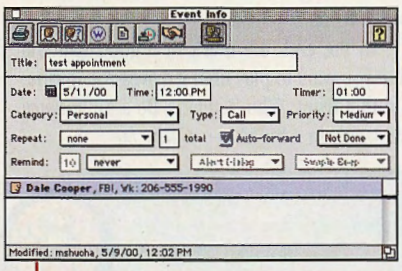
While the two apps in Now Up-to-Date & Contact share information very well, they are in fact separate programs and behave as such. This setup has some advantages. You can circumvent the calendar entirely while making a quick change to a contacts file. It also has its drawbacks. Switching between them using the easy-access icons and menu commands may slow down hyper-speedy users. You won't have to enter information twice, though. Once you set your primary contact and calendar files in both programs' preferences, information you enter in one program gets updated automatically in the other.

Now Up-to-Date makes it easy to set up appointments and meetings. Double-click a calendar day to see a thumbnail view of your agenda. To set an appointment for a particular time, just draw a rectangle over that part of the day and enter as many details as you want in the Event Info dialog box. You can set reminders for an appointment and use the Mac OS reminder sounds. Up-to-Date also works with other Macs through an AppleTalk or TCP/IP network, enabling you to set up group appointments that appear in colleagues' calendars.

Now Contact keeps far more than just name, address, and phone fields in its bag of tricks. If you have a voice modem or a phone capable of receiving Apple Events commands, you can call someone directly from Now Contact. With your Mac set up appropriately, you can also send faxes and email from Contact and then log them in the calendar. Also, Contact can mail merge with Microsoft Word to create quick address labels. Contact's QuickNet drop-down menu access selects Web resources such as WhitePages.com (http://www.whitepages.com) and the Weather Underground (http://www.weatherunderground.com), so you can update phone numbers, check the elements, and even get driving directions for an upcoming meeting.

Power On specifically designed version 3.9 of Now Up-to-Date & Contact to sync calendar and contact information with your Palm-compatible device. In fact, Palm synchronization is the only new feature in this version, so if you don't have a Palm, you needn't upgrade from version 3.8.3 (see "Using Now Up-to-Date & Contact with your Handheld Device," left, for more information on Palm connectivity).

Now Up-to-Date & Contact is not a perfect package. Power On could considerably expand the online help files beyond their present skimpy confines, and Up-to-Date's View menu should really provide an option for viewing specific dates. But overall, this PIM can easily handle the most tortured schedule you can throw at it.
—Mark D. Shuchat-Marx



FOR COMPLICATED MEETINGS, WE DARE YOU to use all the fields in Now Up-to-Date's Event Info dialog box.

good news: Easy-to-use scheduling and contact management software. Good use of Internet. Interfaces with Palm systems. Supports older Macs.
bad news: Limited display options. Substandard online help.



Using Now Up-to-Date & Contact with Your Handheld Device

Palm Desktop has become a security blanket for many handheld users who stumble into work and HotSync before they've even had their morning coffee. However, consider disrupting your comfortable regimen slightly to switch to Now Up-to-Date & Contact, which has more calendar and contacts features than Palm Desktop. For example, Palm Desktop lacks Internet dialing, email and fax options, and networked scheduling. (Don't delete Palm Desktop from your Mac, though—you still need its HotSync functions to connect your Palm to your desktop machine.)

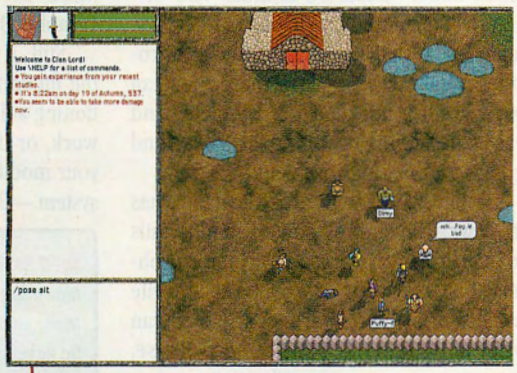
Create and save your primary files in both Up-to-Date & Contact before performing your first HotSync. If you don't, your handheld won't know where to send the downloaded information. Also, you must have both applications open for a successful HotSync. For those performing semiconscious morning HotSyncs, we recommend putting Now Up-to-Date & Contact in your system's startup folder.

Clan Lord

fun & games

COMPANY: Delta Tao
CONTACT: 800-827-9316, http://www.deltatao.com or http://www.clanlord.com
PRICE: $49 (SRP) for game and first two months of play; $10 per month thereafter.
REQUIREMENTS: Power Macintosh, System 7 or later, 32MB of RAM, 40MB of free hard disk space, OpenTransport 1.1.1 or later, CD-ROM, 56-kbps or faster modem.

When Ultima Online and Everquest came into vogue, Mac users cried out for a persistent, massively multiplayer role-playing game they could join. Unknown to most, a Mac-first, Mac-only game already existed in this category. Would-be online adventures should give Clan Lord a try.

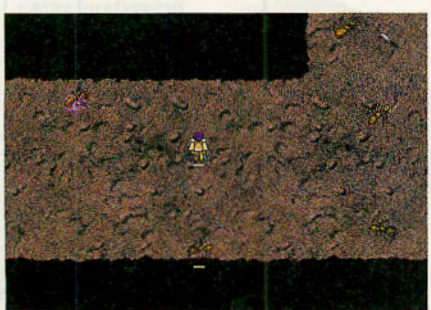


THE TOWN SQUARE, just south of the Temple, is where most adventures begin.

Like most games from Delta Tao, Clan Lord is simple, elegant, and addictive. It's a role-playing game in the classic sense. You create a world and weave a story through character interaction (and weekly updates from Delta Tao). You start by entering a community of exiles in Puddleby, situated within the Lok'Groton islands. Defined only by race and gender, you have the freedom to create your character's personality and background. Rather than entering into a complex system of classes, players either become Fighters, Healers, or Mystics, and work with trainers to build individual skills nearly anyone can learn.

Hard-core gamers may find the game's structure noticeably light on statistics and levels. While you'll certainly find plenty of monsters to kill and treasure to win, the game has a loose structure upon which you build your own fantasies. This focus on community and cooperation also means the game will sorely disappoint players looking for a solo experience. Beginning characters in particular are nearly helpless. Prepare to get healed and rescued a *lot* until you've been around a while. While a few players have gained a certain notoriety, the game is really only playable when you're part of a larger group.

As a network experience, Clan Lord is a dream. The interface is clear and simple. Usually you'll find at least 50 to 100 players online at any given moment, and the vast majority are friendly and welcoming to newcomers. Hard-core gamers should try the demo to test out the change of pace, but casual gamers with an interest in fantasy should find Clan Lord a delightful diversion.—*Rich Pizor*



SUCKS TO BE YOU. This foolish adventurer wandered into a nest of giant insects. Someone send a Healer!

good news: Easy to learn. Addictive. Beautiful artwork. Should run on nearly any Mac still in use.
bad news: Beginning characters are utterly helpless. Teamwork may not appeal to hard-core gamers.



spiffy

The web is a **HAYSTACK.**

There are thousands of websites featuring Mac hardware and software.

Finding the products you see in this issue of

MacAddict

might have been a daunting task. Until now.

SeeMeBuyMe will connect you to the online merchants carrying the EXACT products you see in MacAddict, so you can compare prices from dozens of merchants, get the best deal, and buy them fast! Call or click.

SeeMeBuyMe™

www.seemebuyme.com

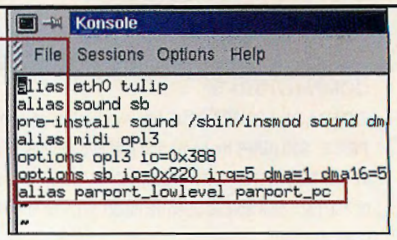
888.220.1146

Virtual PC 3.0 with Red Hat Linux

productivity

COMPANY: Connectix, http://www.connectix.com
CONTACT: 650-571-5100 or 800-950-5880
PRICE: $99 (SRP)
REQUIREMENTS: G3 or G4, 350MHz or faster; Mac OS 8.6 or later; 96MB of RAM (128MB recommended); 1.1GB of free hard disk space; CD-ROM

IF YOU CAN'T PRINT, try adding this line to the /etc/conf.modules file so it matches the one shown here.



When Connectix added Linux support to Virtual PC 3.0, we found to our delight that the emulator ran Linux quite well—once we downloaded Linux distributions.

Linux compatibility was just too cool to pass up—so last March, Connectix introduced a version of Virtual PC 3.0 with Red Hat Linux 6.1 installed. The new install adds a few tweaks to Red Hat. Despite a few rough edges, this is a worthy product.

Running Linux atop Mac OS has its place for two groups: Linux newbies and kernel hackers. For neophytes, running Linux under Virtual PC is much less disruptive than installing it on another system. For kernel hackers, Virtual PC provides a safe environment where they can back up the entire hard disk quickly and easily before trying out their latest and greatest kernel improvements.

Virtual PC 3.0 with Red Hat Linux has its flaws. The sketchy documentation fails to explain an easily resolved printer problem. Just alter your /etc/conf.modules file as shown in the image above so VPC can print to its (virtual) parallel port. Worse, the mouse support currently can't emulate three mouse buttons, which some X (graphics) applications require.

Still, if you want to get into Linux without the initial pain and suffering of repartitioning a drive and getting an installation to work, or if you want a safe place to try out your modifications, Virtual PC 3.0 is a great system.—*Ian Sammis*

good news: Outstanding PC emulation. Nice Mac-Linux integration. **bad news:** Minor printing flaw. Poor documentation. No three-button mouse emulation.





CHARTER SUBSCRIPTION OFFER
FREE ISSUE AND FREE CD-ROM OF digitalFOTO!

Call 1-877-415-3686 to receive your FREE ISSUE and FREE CD-ROM of digitalFOTO at NO RISK!

If you're pleased with what you see, we'll send you 11 more issues and 11 more CD-ROMs (12 in all) for only $24.95. That's a 74% savings off the newsstand rate.



Offer good in U.S. only. Cover price is $7.99. Canada: U.S. $45, includes GST. Foreign: U.S. $58. Prepaid in U.S. funds only. Please allow 6-8 weeks for delivery of first issue.

5UTL8

Kawasaki ATV PowerSports

fun & games

COMPANY: Monkey Byte
CONTACT: 800-522-3774, http://www.monkeybyte.com
PRICE: $24.95 (SRP)
REQUIREMENTS: 180MHz PowerPC or faster, Mac OS 8.1 or later, 32MB of RAM, 50MB of free hard disk space

After burning through Star Wars Episode I: Racer, we were ready for a gritty racing game to satisfy our two-stroke, mud-eating side. Instead, we got frustration and a couple of system crashes—not even a lousy T-shirt.

Kawasaki ATV PowerSports is a console-style racing game that features a large selection of courses, terrain, and weather. Race types include a standard race, a rally, and variations on terrain racing where you claim as many gates as you can in a limited amount of time.

You initially choose one of two ATVs, which look different but feel similar on the track (a close look at the atv.cfg file in the Config folder reveals the characteristics of each). If you choose to race a circuit (and you place in the top three finishers *and* in the top three points leaders), you can move on to the next race. Move ahead in enough races, and you'll unlock new ATV styles from which to choose.

This method of ATV selection highlights a major weakness of the game—it doesn't offer any satisfying way to add power to your ATV. If you could use race winnings for improvements, as in other games, then we'd be talking.



IF YOU TRIED TO TRAVERSE an 80-degree slope in real life, you'd find out just how quickly you can end up underneath a heavy mass of metal.

At best, PowerSports is uninspiring. Its main highlight is the decent (but not spectacular) set of graphics. Also, the game limits the controls to left, right, speed up, and slow down, so you can't do respectable jumps, tricks, or slides. Instead, you'll race against unimaginative, remorseless computer-controlled ATVs, which follow waypoints to complete the game. If there happens to be a tree in the course, too bad—the ATVs will hit it on each lap. Don't pity your opponents, though—you'll rarely beat them. The computer controls them with inhuman accuracy, so it's nearly impossible to compete with their efficient, tight turns.

Kawasaki ATV is a dead-simple game that will keep you occupied for only a few races before you get bored, frustrated, or both. Had this been a $10 shareware game, it might have merited a higher rating, but at $25, the price is just too high.—*David Reynolds*

good news: It's a Mac racing game. **bad news:** Bad artificial intelligence. Little depth to game or physics model. Tends to crash. Uninspired graphics.



Tip

Watching riders fly off their ATVs when they crash is good fun. To do this, open the file named config.cfg (located in the Config folder) with SimpleText. Change the number after the word *FlyingRiders* from -1 to 3, then save your changes. Also, if you're experiencing system crashes, try changing the word *false* to *true* after the *SystemFriendly* item in the same file.

We've got the **NEEDLE.**

We searched the web and found all the merchants carrying the exact products featured in this issue of

MacAddict

And they're all in one place. SeeMeBuyMe.

SeeMeBuyMe will connect you to the online merchants carrying the EXACT products you see in MacAddict, so you can compare prices from dozens of merchants, get the best deal, and buy them fast! Call or click.

SeeMeBuyMe™

www.seemebuyme.com
888.220.1146

Epson Stylus Color 670

hardware

COMPANY: Epson
CONTACT: 800-463-7766 or 562-276-7202, http://www.epson.com
PRICE: $89
REQUIREMENTS: USB-equipped Macintosh, Mac OS 8.1 or later; 32MB of RAM (64MB recommended); 8MB of free hard disk space (200MB recommended); CD-ROM



PHOTOGRAPH BY AARON LAUER

FOR LESS THAN THE PRICE of dinner for two at Four Seasons, the Stylus Color 670 prints vibrant colors.

Low cost doesn't mean low quality. Designed for home use, the Epson Stylus Color 670 prints amazingly sharp color and crisp text, at an equally amazing price tag—under $100.

The 670 yields excellent color at a hardware resolution of up to 1440 by 720 dpi. Epson's Variable Sized Droplet Technology further enhance print quality. This feature controls the ink droplet size, using large droplets in dark and shaded areas, small droplets in light and complex regions. Solid-color images printed exceptionally well with little banding, and art using Illustrator's gradient mesh tool printed with beautiful color blends and no obvious breaks in color. The complex FreeHand drawings we printed at the 720-dpi photo-quality setting looked marvelous, although they took up to 20 minutes to print out.

This brings us to speed, the apparent trade-off for high-quality, low-cost output. Printing an 8-by-10-inch glossy photograph took between 12 and 15 minutes at 720 dpi. The speed setting in Automatic mode could print this image in 5 minutes but with lower contrast between lights and darks. Printing a full-page color Adobe PDF file at 720-dpi photo quality took 9 minutes.

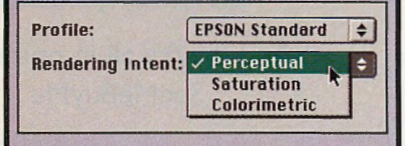
Text printed crisply, even at very small type sizes. Using a Bookman font, we were able to read text easily down to 3 points. Speed was good but not great—at the quality setting in the automatic mode, a full page of text printed in 1 minute, 4 seconds (a second page printed in 45 seconds). Pages printed at 360 dpi did not achieve the desired blackness in bold or large text; however, we achieved the best black overall at 720 dpi.

Epson's print dialog box lets you control basic print options like color and media type, as well as a minefield of options in Advanced Settings, accessed by clicking the Custom radio button in the Mode option. You don't need Advanced Settings for general printing, but it's a good place to fine-tune the final image. You can select a phenomenal number of settings here, but you'll have to use trial and error to learn what they do (see "Say What!?!", left).

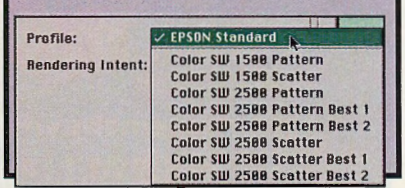
It was a snap to set up this compact, small-footprint device. The ink cartridges went in smoothly, but read the instructions telling you which plastic strips to tear off the cartridge and which to leave. We found software installation a bit tedious as we had to install the drivers, the online reference guides (not worth it), and some image-enhancement software separately. Flash movies on the CD show you how to install ink and perform other maintenance procedures. Trying to run these from the installer screen resulted in error messages. We viewed the movies by finding them on the CD and double-clicking them.

We've found that nearly all inkjet printers sound a bit like the noise R2D2 might make if you tickled him. Although it's not loud, the Epson 670 produced a resonating *jeep-jeep-jeep* during printing that may bother some people. If you want high-quality printing at a great price, however, you'll find this inconvenience well worth enduring.—*Gary Coyne*

Say What!?!

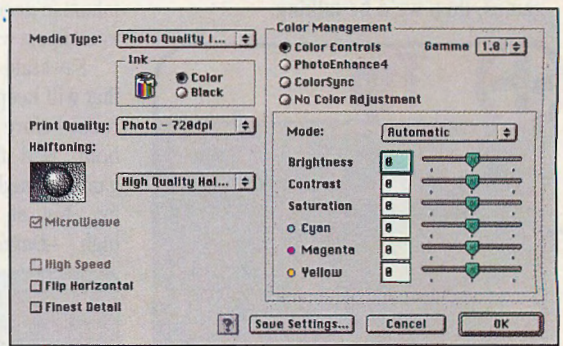


What's the difference between Perceptual, Saturation, and Colorimetric? We're not sure, either. Nowhere in the enclosed product manual do those terms appear. Likewise, you can't find any information on the other three areas (PhotoEnhance4, ColorSync, and No Color Adjustment) in the software's Advanced mode. Epson is certainly not the only manufacturer with a slim user's guide, but here important parts of the program have no documentation. When reading a manual, we hope to find every dialog box, menu command, and icon mentioned in the index. Call us dreamers.



good news: Affordable, high-quality color printing. Small footprint. Easy setup. **bad news:** Default margins cut into Word footer. USB cable not included. Manual lacks important details.





IT'S OPTION OVERLOAD in the Advanced Settings dialog box. Each color management area provides different options, which change based on selected paper media.

New!
Deluxe Features
Mini-Games
Pop-up Guides
New levels and more!

SCRABBLE®

BRAND

CD-ROM CROSSWORD GAME

Family FUN for All Ages



Challenge your friends, or play against Maven – your animated computer opponent.

Scrabble® is back and better than ever with new features and colorful graphics that will delight any Scrabble enthusiast. Sharpen your skills with Mini Scrabble games, anagrams, rackagrams and tournaments. Rich 3D graphics, an on-board dictionary with pop-up definitions, customizable soundtrack, new animated Maven and user adjustable skill levels all combine to take Scrabble to a whole new level of fun!

MONOPOLY **Coming This Fall!**

EVERYONE E CONTENT RATED BY ESRB

Mac

HASBRO Interactive™

Now available at select

Babbage's and Software Etc.

locations and other fine Mac retailers or contact us at 800-229-2714 or at www.gfstore.com

©2000 Hasbro Interactive, Inc. ©2000 Hasbro, Inc. All Rights Reserved. Scrabble® is a trademark of Hasbro in the United States and Canada. Scrabble rights elsewhere in the world are held by J.W. Spear and Sons, PLC. Monopoly® is a trademark of Hasbro, Inc. ©2000 Hasbro Interactive, Inc. ©2000 Hasbro, Inc. Published and distributed by MacSoft, an Infogrames, Inc. company. All other trademarks are the properties of their respective holders.

MacSoft®

www.wizardworks.com/macsoft

powerplay

Only the best lollygagging, layabout, goldbrick software shown here.

Get Set for Serious Play

Mob of Mac Games Shown at Gaming Conference

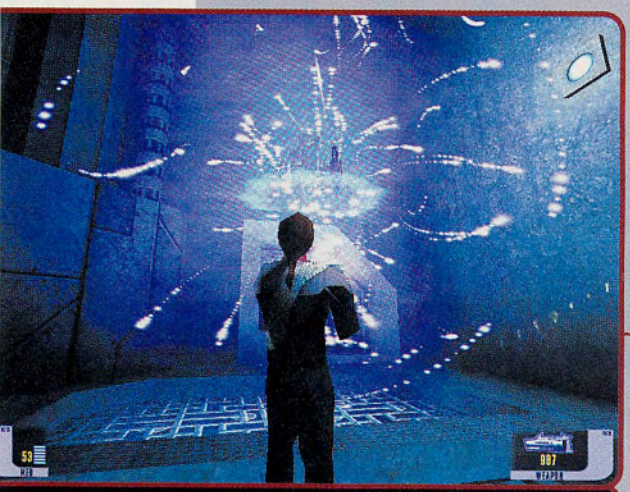
FIND A LAST CALL demo on The Disc.

WHICH GAME ANNOUNCEMENT gets you going? Tell all in the *MacAddict* forums (http://www.macaddict.com).

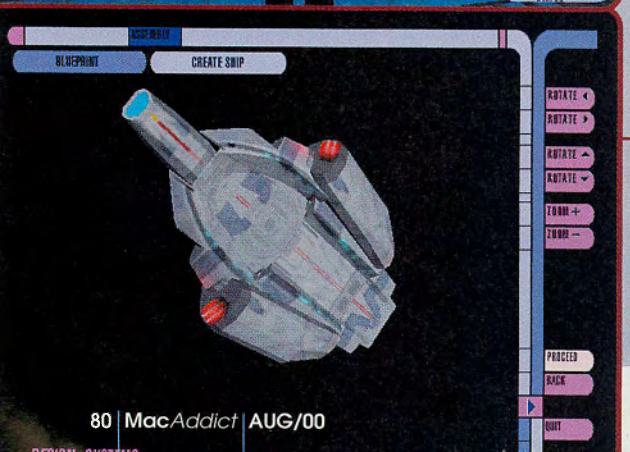
The annual Electronic Entertainment Expo gaming show has come and gone, and nestled among the gargantuan booths from heavyweights such as Sony and Nintendo were a surprising number of Mac-related game announcements—so many, in fact, that we can't cover them all here. Although late spring has brought a bit of a lull as far as Mac gaming goes, the next six months or so promise a pack of great releases. Here's a look at what you can expect.—*DR*

Simon & Schuster Interactive

Simon & Schuster Interactive (http://www.simonsays.com/interactive) is quickly becoming one of the largest publishers of Mac gaming titles, and it's showing no signs of slowing down. Now, if only the majority of these titles were ones gamers were anxious to play, we'd be truly happy. Aside from the much-anticipated release of Star Trek Deep Space Nine: The Fallen, Simon & Schuster will also offer Star Trek Starship Creator: Warp 2 (a follow-up to the worst game ever, the original Starship Creator). Warp 2 is the next-generation starship simulation software that lets you create Federation starships and send them out on missions. Also on the list are Last Call (a bartending simulator), Deer Avenger 3D (which turns the tables on Deer Hunter); Bass Avenger (same idea); Panty Raider (an adult-oriented game that involves taking pictures of supermodels in their underwear for three extraterrestrials—don't ask); and M&Ms: The Lost Formula. The one Simon and Schuster expo game not yet destined for the Mac is Star Trek: Dominion Wars—a pity, because it looks amazing.



IT'S STILL COMING! It's still coming! Star Trek Deep Space Nine: The Fallen is looking marvelous, and it should be out in September.



THE BADDEST SHIP in the Federation, and you can create and crew it yourself in Star Trek Starship Creator. Now, if you could just install a couple of cup holders...



THAT'S GOING TO LEAVE A MARK—pity you can't do it to your friends, since Oni is shipping without multiplayer capabilities. Still, it looks like a great single-player game.

Bungie

Two questions follow Bungie around these days: "Will Oni ever ship?" and "Tell us everything you know about Halo." We have an answer to the first question—Bungie (http://www.bungie.com) hopes to ship Oni simultaneously with PlayStation 2, slated for release in late October. Bungie had to strip multiplayer capabilities from Oni in order to ship it, simply because lag makes a hand-to-hand combat game almost unplayable, and Bungie couldn't solve the lag problem. That's disappointing, both for Bungie and for gamers who couldn't wait to put the smack down on friends, Konoko-style—but at least Oni will ship after months of delay. As far as Halo goes, Bungie showed off this digital wet dream in a small theater, complete with a huge screen and a beautiful sound system. The company claims to have completed 60 percent of Halo, and it shows—Bungie folks are already playing a crude multiplayer version. Halo looks like no other game we've seen, with stunning graphics, an interesting back story, and gameplay that promises to be outstanding. Halo players can specialize in various areas (such as driving or sniping) and advertise themselves as experts. Bungie has not given an official release date for Halo yet.

Aspyr

Although Aspyr (http://www.aspyr.com) didn't show its soon-to-be-released titles, it does have some heavy hitters coming out: the stealthy and strategic Deus Ex (based on the Unreal Tournament engine), Tomb Raider: The Last Revelation (starring a younger Lara Croft); and The Sims, one of the hottest—and creepiest—PC games around.

MacSoft

Already riding high with a range of titles ranging from Bingo•Bingo•Bingo to Unreal Tournament, MacSoft (http://www.gtstore.com/macsoft/macsoft.asp) announced several new games due out over the next few months, including the golf simulation Links LS 2000, the car-chase game Driver, and the classic board games Monopoly and Scrabble. (We wouldn't have expected Scrabble to be an exciting computer game, but the folks at MacSoft seem to have managed it.) Driver seems to be the hands-down winner of this group for hard-core gamers, and we...uh, tested the game on the show floor many, many times. One game MacSoft showed but hadn't announced it would be publishing is Silver, a third-person role-playing adventure set in a fantasy world complete with swords and magic.

And Many Others

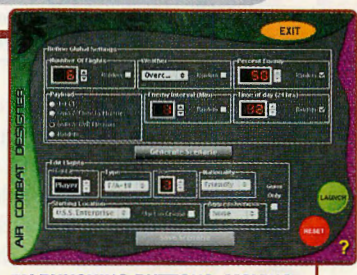
It's unusual to have too many games coming out to mention, but hey—that's what success breeds. Among other hot titles destined for the Mac are Myst III, Fly2K, Rune, Diablo II, Sim Theme Park, 4X4 Evolution, and Super Bombad Racing. Better schedule some quality cyberspud hours with your Mac—there will be plenty of games to eat up your Saturdays.

New Life for Old Flight Sims

Air Combat Designer Challenges F/A-18 Korea Pilots

Players of F/A-18 Korea, one of the best combat flight sims to come to the Mac, may be getting a *little* bored. After all, the game's been out for a couple of years now, and the scenarios that come with it hold your interest for only so long.

The freeware program Air Combat Designer comes to the rescue. This nifty utility (available at http://www.gttweb.com or from The Disc) will generate air-to-air combat scenarios, saving you the time you'd spend creating your own in F/A-18's scenario editor. The application can cook up a ton of interactions you've never faced, freeing you from the boredom of trying yet *another* approach to the same ol' mission.—*DR*



BY PUNCHING BUTTONS, MOVING SLIDERS, and checking boxes, you can quickly produce an F/A-18 scenario you've never seen before.

First Look at Last Call

We'll need to see an ID before you read this article

If you saw the Tom Cruise movie *Cocktail* more than once, you may not only be a sick individual—you may also be the perfect person to play Last Call. In this bartending game, available for $17.95 from Simon & Schuster Interactive (http://www.simonsays.com/interactive), you get behind the bar to foist your concoctions on patrons of your establishment.

The objective in Last Call is to advance through levels by collecting tips from the odd and sometimes scary range of patrons (mostly caricatures) who frequent the place. The name of the game here is good old-fashioned service—make the drinks quickly and correctly, spend a little time flirting, and you could be on the way to big bucks. Mixing the drinks can get complicated—these are real drink recipes, after all—but you have a recipe book to help you choose the right glass, mixers, spirits, and implements, and finish up with the correct garnish. The most difficult part of this strangely addictive game is finding the beer—it's on ice to the right of the Triple Sec bottle.

The only things missing from this Director-based game are the bar fights and vomit-doused bathroom stalls—and we don't really want a game that includes those, anyway. Last Call will cure your hankering to get behind the bar.—*DR*



STRANGE AND WONDROUS folks will come calling at your bar. Keep them happy, and you may get to go home early with a little extra green in your pocket.

Screen Shot of the Month

Some of the screen shots we're receiving are beautiful things, indeed—lots of racing scenes, Unreal Tournament fights, and a few aircraft fly-bys. This month's selection is an artfully composed item showcasing the beauty of the Unreal Tournament engine. If you'd like to see your screenshot in print, send it to letters@macaddict.com.



Artist's Statement

Here's a UT screenshot I took that I thought looked pretty damn good. (In my humble opinion, this one is as good as or better than the ones on UT's box.) I've got a blue-and-white G3/300 and a Voodoo3 3000.—*Andy Kirn*

how to

Mirrors, movies, and mail macros—we've got the Ms covered.

Reflect Upon Photoshop

by Chris Vanderhoof

TRICKY

TOUGH
This stuff's for the pros.

TRICKY
It'll take some effort, but you can do it.

EASY
The fundamentals, if you will.

What You'll Need

- Photoshop 5.5
- An image you want to make look cooler
- A soda pop, in case you get thirsty

IT MIGHT BE EASIER to pull out the windex, but that would require time away from your Mac!



PHOTOGRAPH BY AARON LAUER

The beauty of Photoshop is that it is as simple as the real world around you. With the click of a button you can make modifications as basic as rubbing a color with your finger, or as drastic as changing the whole color scheme of your image. With a few basic tools and concepts, you can use Photoshop to capture the beauty of the natural world.

Sometimes, though, the real world lets you down. Suppose you have a nice photograph of some item you want to show off (say, that hot new subwoofer you got a few days ago). Unfortunately, your shot's a bit flat and doesn't really look quite as cool as you'd thought it would. No problem! Here's how to turn an uninspiring photo into a beautiful shot of your machine sitting on a polished white table by faking a reflection.

FIND A PHOTOSHOP 5.5 tryout on The Disc.

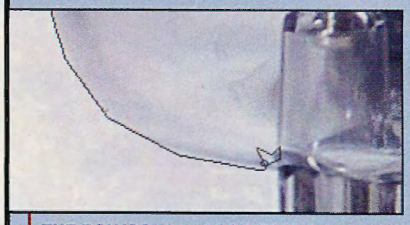
SHARE OTHER Photoshop tricks at http://www.macaddict.com/debate.

Uncluttering the Image

This iSub photo has a nice, clean background, but to pull off this effect you need the background to be completely clear. A cluttered background will interfere with the reflection you'll create, so before you create the reflection, you'll need to delete the background. There are two ways to do this—a simple method that produces somewhat inelegant results, and a difficult method that produces very good results.

1. Select the Object

The simpler way to delete the background uses the polygonal lasso tool. With this tool, you can create a selection area from a succession of straight lines. Carefully form a selection path around the border of the object.



THE POLYGONAL LASSO TOOL is very easy to use, but using it to follow curves can be a drag.

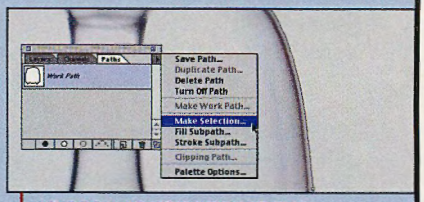
If you're a bit more experienced, you'll probably prefer to use the pen tool, usually a less tedious process (see "How to Use a Bézier Pen Tool," Mar/00, p64 for some pointers—it can be tricky). Because it uses curved segments rather than straight lines, the pen tool usually makes forming a clean path around the object much easier. Unfortunately, the pen tool creates a Work path rather than a Selection path. The Work path has many advantages (you can make modifications after you create it, and save it for later use), but to modify the image you'll need to convert it into a Selection path. Once you've created a Work path, choose Make Selection from the Paths Palette's pop-up menu. To avoid inadvertently deleting the Work path after you make your selection area, click the gray area in the Paths Palette to deselect that path.



THE CURVED PATHS YOU CAN CREATE WITH THE Pen Tool let you elegantly follow the edge of an object.

2. Reverse the Selection and Delete the Background

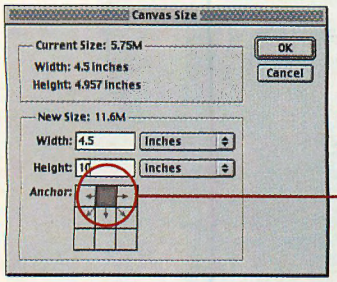
Once you've selected the object by either method, choose Inverse from the Select menu to select every element outside the object. Now that you've selected just the background, press Delete to make your object stand alone against a solid white background.



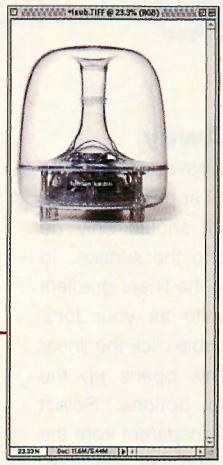
AS SOON AS YOU CHOOSE THE MAKE SELECTION OPTION, the path becomes a selection you can reverse to delete the background.

1 Choose Your Image and Clean It Up

Find a good image, and remove any distracting background (see "Uncluttering the Image," p82). To make room for the reflection, you'll need to change the size of the canvas. Select Canvas Size from the Image menu. Double the height and anchor your image to the top—this will expand the bottom of your image, making room for the reflection.



CLICKING THE TOP CENTER box in the Canvas Size dialog box tells Photoshop to create extra space directly below your existing image.

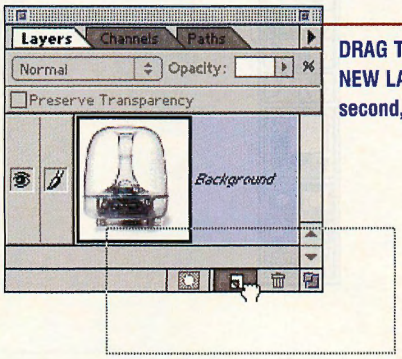


NOW YOU'VE MADE ENOUGH ROOM for a reflection.

2 Flip the Reflection

Using the Layers palette, make a copy of the Background layer. To do this, just drag the image of the Background layer over the page icon at the bottom of the palette.

To flip the image, use Select All (Command-A) on the Background Copy layer. Then choose Flip Vertical from the Transform submenu of the Edit menu.



DRAG THE LAYER ONTO THE NEW LAYER palette to create a second, identical layer.



HERE'S THE START OF OUR REFLECTION: an exact copy of our original image, flipped upside-down.

3 Multiplying iSubs

In the Layers palette, change the Background Copy layer type to Multiply. Multiply will smoothly blend the two images together in a way that always results in darkening an image—you don't want to alter your background layer at all! When you place a layer in Multiple mode, it becomes transparent—white ports don't affect lower layers, while darker ports become slightly translucent.

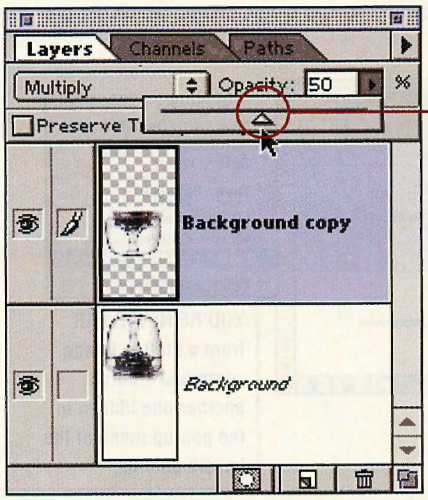
WITH THE TOP LAYER IN MULTIPLY MODE, you can see right through its white portions to the bottom layer.



4 Move and Tint

Using the move tool, push the Background Copy Layer up so it overlaps the Background Layer, where a real reflection would appear. Don't worry about the overlap area—it will become indistinct in a moment.

In the Layers palette, lower the Background Copy layer's opacity. Reducing Opacity in Multiply mode lightens the dark portions of the layer, leaving white areas transparent.



AS YOU LOWER THE OPACITY, the reflection becomes fainter and fainter.

5 Fade Away

Now you have to make the reflection appear to fade away vertically; it should only be sharp right next to the surface. To make it fade, use the linear gradient tool. Choose white as your foreground color. Double-click the linear gradient tool. This opens up the Gradient palette options. Select Foreground To Transparent from the pop-up menu, and set the foreground color to white. Using the tool, drag to create a line from the point where you want the image to vanish completely to the point you want left untouched. You can repeat this step over and over again until you create a nice, realistic fade.



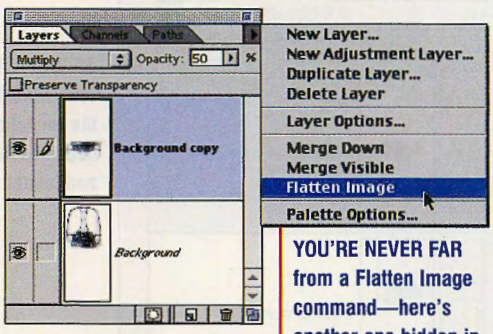
Use the gradient tool to make the reflection less distinct as it moves away from the tabletop.



6 Flatten Image

You've now made a Photoshop file with two layers, which you can only save as a PSD, or Photoshop document. It's always a good idea to save your work in layers, so you can go back and make adjustments if you want to fiddle with the image later. (Once you've flattened the image into a single layer, it becomes much more difficult to alter the reflection without altering the original image.)

When you're done, you'll probably also need to save the image into one of the more usual graphics file types (JPEG, GIF, or TIFF, for example). Since these types don't support multiple layers, squash the image back into one layer first by selecting Flatten Image from the Layer menu. This brings all the layers into one. Now we have a single image, which we can save in any format.

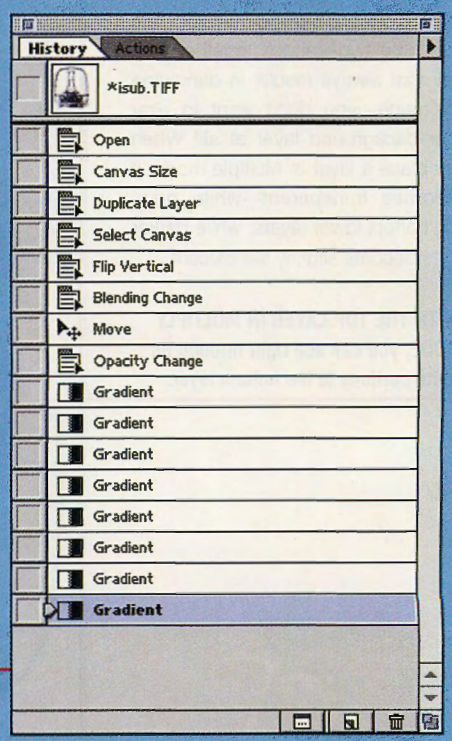


YOU'RE NEVER FAR from a Flatten Image command—here's another one hidden in the pop-up menu of the Layers palette.

Chris Vanderhoof, a longtime freelance *MacAddict* artist, has an endless supply of clever Photoshop tricks.

Six Small Steps Back... One Giant Leap for Photoshop

Like most other Macintosh applications, Photoshop lets you undo your last action by choosing Undo from the Edit menu or by pressing Command-Z. Unlike most Mac programs, it also lets you undo more than just your last action. Photoshop 5 includes an amazing History palette that remembers your every movement, allowing you to skip back many steps to correct a mistake.



WHEN UNDO WON'T QUITE DO, the History palette can let you rewrite history.

Discover True Compatibility



Connectix **VIRTUAL PC** delivers true compatibility by enabling you to run multiple operating systems on your Mac. With Virtual PC, you can run Red Hat Linux, Windows 2000, 98, 95, or PC-DOS from a window on your Mac desktop. You will be more productive by enabling your Mac to run PC programs, access PC networks, and share files with your PC-based co-workers or clients.

Connectix Virtual PC is a software solution that's like having a Pentium chip in your Mac. And, it's available in 5 different versions. Whether you need to run Red Hat Linux, Windows 2000, 98, 95, or PC-DOS on your Mac, Virtual PC makes it easy to get started because the operating system is pre-installed. Bridge the compatibility gap between your Mac and most PCs by using Virtual PC from Connectix.

To buy or for more information, go to www.connectix.com or call 1-800-395-1804

Connectix

© Copyright Connectix Corporation. Connectix and Connectix Virtual PC are trademarks of Connectix Corporation. All other trademarks are property of their respective holders.

Ignore Apple's iMovie Advice

by David Reynolds

EASY

What You'll Need

- **iMovie (downloadable from http://www.apple.com/imovie/download)**
- **Power Macintosh with a G3 (either stock or upgrade)—yes, you can run iMovie on a 604e, but it's very painful.**
- **At least 64MB of RAM-more is better.**
- **Video that you'd like to edit**

FOUND A WAY to run iMovie on a hopped-up IIfx? Come tell us on http://www.macaddict.com/debate.

Back in late April, Apple did something very cool—it released iMovie as a free download from its Web site. That's right—all the power of iMovie is available for free, from Apple, and the only difference between this version of iMovie and the one that shipped with every iMac DV is that the downloadable version doesn't have tutorial files. The price for all this digital video goodness? Why, just an email address—or that's what Apple would have you believe (sinister laugh optional). Of course, there's *always* a hidden price for free things, and in the case of iMovie, it's the program's system requirements, which are quite high. How high? Just take a look at "Requirements Versus Recommendations," p88, to find out: Following Apple's Guidelines, you'd need a brand new system at a cost upwards of $1,599 (Apple's price for a G4/400 system).

We're here to help lower that a bit. Although the recommendations Apple gives for running iMovie make for a great Macintosh, you *can* use iMovie on older hardware. We'll show you how to get your Mac ready for iMovie, and we'll walk you through using it without FireWire.



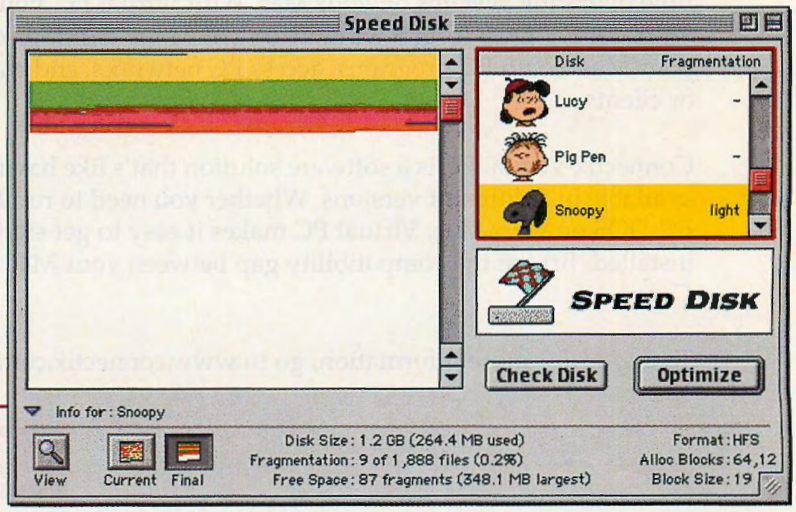
ILLUSTRATION BY HUGH D'ANDRADE

Preparation and Installation

A bit of optimization will go a long way towards making iMovie run tolerably on an older Mac. Here are a few pointers.

1 Do the Right Disk

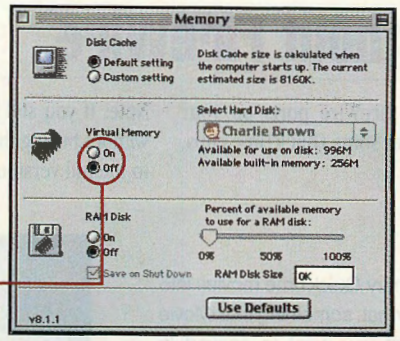
The hard drive on an older Mac is usually fast enough to be able to handle digital video—it must handle 3.5 megabytes per second, so the internal SCSI and ATA drives shouldn't have a problem with it. To use iMovie on your Mac's hard drive, make sure you have a big chunk of free space available, and that the drive is defragmented. Don't use a hard drive connected to the external SCSI port on an older Mac. That kind of setup may not be fast enough to keep up with capturing video to iMovie.



IN THIS CASE, it's important to keep your hard drive defragmented. Use Norton Utilities for Macintosh or TechTool Pro to do the trick.

2 Memories...

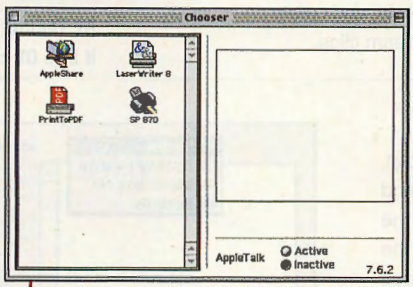
In order to make sure that your Mac's hard drive is able to capture data at its fastest rate, you'll need to turn off virtual memory, which can interfere with digital video. To turn off virtual memory, open the Memory control panel, click the Off radio button, close the Memory control panel, and restart.



OPEN THE MEMORY control panel and make sure that Virtual Memory is turned off.

3 A Mac Can be an Island

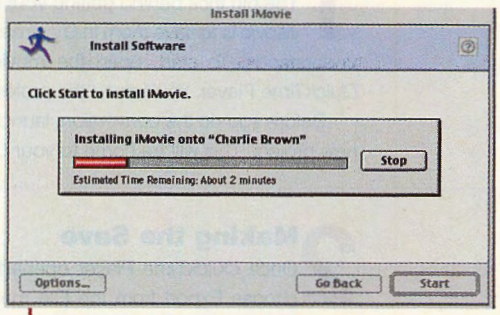
Like virtual memory, AppleTalk networking can interfere with digital video editing by sucking up valuable processor cycles. The fix for this is easy—open the Chooser in the Apple Menu and click the Inactive radio button in the lower-right corner of the window next to the word AppleTalk. Alternatively, you can also shut off AppleTalk by selecting AppleTalk Inactive from the AppleTalk Control Strip module.



WE'LL USE THE CHOOSER'S AppleTalk radio button to turn off AppleTalk with the click of a button.

4 Install iMovie

When you first download iMovie, it will arrive in the form of a disk image. Double-click on this image to mount the disc image, and then open the disk image icon. Inside, you'll find the installer and the iMovie Read Me—read it. Then, double-click the installer icon to launch the iMovie installer and follow the instructions that pop up on screen.



A QUICK DOUBLE-CLICK on the installer icon will get iMovie on your hard drive in no time.

Requirements versus Recommendations

The spiffy downloadable version of iMovie demands some high system requirements, but some are merely recommendations. Here's our take on the system requirements.

Listed Requirement	Is it really required?
Power Macintosh G4 or PowerBook with FireWire	No. iMovie will run well on G3s, including those with a G3 upgrade. If you're using a very old system with a G3 upgrade, you may run into problems, but the G4/FireWire PowerBook requirement has more to do with getting FireWire on your Mac than with defining a processor speed.
Mac OS 9.0.4 or later	No. However, Mac OS 9.0.4 does ship with the best FireWire drivers to date, so if you're using FireWire, it would be a good idea to upgrade.
QuickTime 4.1 or later	No. QuickTime 4.1 does have some nice bug fixes, though, so it's a good idea to upgrade in most cases. If you're having trouble with 4.1, you can always reinstall 4.0.
64MB of RAM	Yes. Video editing consumes lots of RAM—typically the more RAM you have the better, and 64MB is a minimum for this sort of work.
16MB of free RAM for iMovie	Yes. Again, more RAM will help iMovie run better, so give it as much as you can spare.
A CD or DVD drive	No, although it's difficult to find a G3-based Mac (either upgraded or stock) without one.
2GB of free hard drive space	No, although digital video eats up a ton of hard drive space. Two gigabytes is a minimal amount of space to create a decent project—look into getting more if you plan on doing a lot of iMovie work.
An 800 by 600 display that can handle thousands of colors	Yes. iMovie requires a minimum resolution of 800 by 600, and digital video shown in 256 colors just looks awful.
A built-in FireWire port	No. PCI-based FireWire upgrade cards work great with iMovie, including OrangeLink cards.
A 4-pin to 6-pin FireWire cable	No. This cable is only necessary if you plan on capturing digital video from a DV camera. If you're going to be using video from another source (such as a USB video capture device), you don't need FireWire ports or cables.

Using iMovie without FireWire

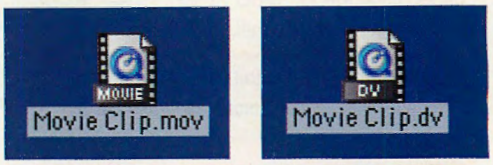
It's possible to use iMovie without having FireWire ports on your Mac—in fact, if you just want to stitch together some QuickTime clips, you don't even need a video camera.

Note: If you still have MoviePlayer 2.5 around, you can do this trick without buying the full version of QuickTime 4.0. But, hey—upgrading to the full version of QuickTime is only $29.95. We suggest you buy it.

1 Opening the Clips

The big trick behind getting your ordinary QuickTime movies into iMovie is to save them in DV stream format, something that iMovie understands. To start, open the movie that you want to convert in QuickTime Player. You'll need the professional version to do this.

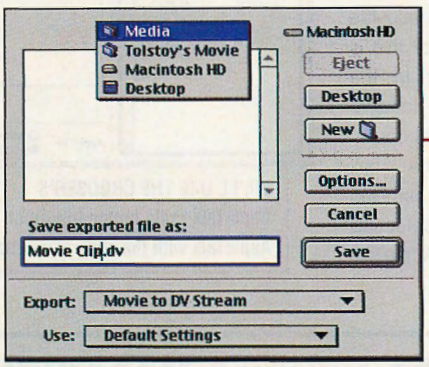
Before you do the conversion, launch iMovie, and create and save a new project. This will be home to your DV stream clips.



BY TAKING AN ORDINARY QuickTime movie and saving it as a DV stream, you can bring it into iMovie.

2 Making the Save

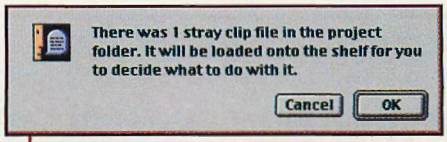
Once QuickTime Player opens the clip, choose Export from the File menu, and then go to the Media folder, which is inside the folder created by your new project. From the Export pop-up menu in the dialog box, choose Movie To DV Stream and then export the clip to that folder. QuickTime will chug through the conversion.



BY EXPORTING THE MOVIE as a DV Stream and saving it in a project's Media folder, you can bring your clips into iMovie.

3 Finishing the Transfer

Now, launch iMovie by double-clicking the new project that you just created. While launching, iMovie will search the Media folder and discover the new DV clip, then it will tell you that it will put the new clip onto the shelf for you. Click OK, then use your new clip just as if it were captured from a video camera.



ONCE THE CLIP is in the correct folder, getting it into iMovie is as easy as clicking OK.

Free iMovie Stuff

If you're in the mood for more iMovie transitions, backgrounds, and sound effects, you're in luck—Apple has a ton of them located on the iMovie Web site. You can find an additional iMovie plug-in pack (with several new transitions) at http://www.apple.com/imovie/files/Plug-inPack.sit, and you can find scads of backgrounds and sounds at http://www.apple.com/imovie/freestuff.

GUESS APPLE COULDN'T think of a word that means "shoot," but begins with an "e."



MacAddict's Executive Editor David Reynolds has spent the past week in an Alien Crossfire-induced daze.



drive home a classic.

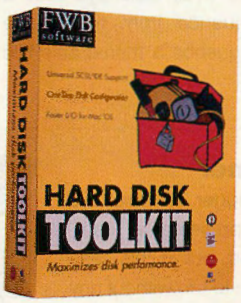
Hard Disk ToolKit® 4.0 is one upgrade with a lot of moxie. Don't pass it by!

This new version of FWB's all-time classic disk utility includes full support for **MacOS 9** and all the latest machines from Apple, including the new iMacDV and iBook. So don't enjoy that new **G4** smell without Hard Disk ToolKit under the hood. Version 4.0 incorporates cutting-edge technology with the utmost reliability and rock-solid stability you are used to receiving from FWB.

Now with complete **FireWire** support, you can manage mass storage volumes over the blazing fast IEEE 1394 standard. That means the new ToolKit is a must-have for graphic designers and digital video professionals with FireWire storage devices. Support for **ATAPI** removables and many other new storage devices makes Hard Disk ToolKit 4.0 one keen upgrade.

Fully HFS+ compatible, the ToolKit now lets you **resize HFS+ volumes** with ease. New startup diagnostic tools for **ATA** devices detect and report drive defects before they cause system downtime. And interface enhancements make storage management easier than ever.

Take a spin on over to **www.fwb.com** for the full scoop on Hard Disk ToolKit 4.0, or to download your upgrade for **just $49.95**. While you're there, be sure check out the rest of the FWB classics.





Outpost.Com
800-856-9800
www.outpost.com



MacWarehouse
800-255-6227
www.microwarehouse.com



MacZone
800-711-4335
www.maczone.com

MacConnection
800-986-2289
www.macconnection.com

CDW
800-400-4239
www.cdw.com

MacMall
800-552-8883
www.macmall.com

Fry's
650-496-6000

Micro Center
800-743-7537
www.microcenter.com

FWB® software

© 2000 FWB Software,LLC. FWB, Hard Disk ToolKit and CD-ROM ToolKit are trademarks or registered trademarks of FWB Software. SoftWindows is a trademark of Microsoft Corporation in the United States and other countries, and is used by FWB Software under license from owner. Microsoft and Windows are registered trademarks of Microsoft Corporation. RealPC is a registered trademark of Insignia Solutions, Inc.All other trademarks are property of their respective owners. Specifications subject to change without notice. All rights reserved.

Get Your Email in Your Sleep

by Joseph Holmes

TOUGH

What You'll Need

- Outlook Express 5
- QuicKeys 4.0 or later (QuicKeys 5.0 shown)

FIND A QUICKEYS 4.1 demo on The Disc.

TAUGHT YOUR MAC any other cool tricks? Show off your macros at http://www.macaddict.com/debate.

Sitting on the train to work—or on the bus, or in the backseat of your carpool—you open your PowerBook, longing to read and answer all the email that's waiting for you at your destination. If only you'd had time to download your messages before dashing out the door this morning—but you barely had time to tie your shoes! Wouldn't it be great if you could set up your PowerBook to download your email all by itself while you ran around looking for clean underwear?

Fortunately, there are a number of clever programs called macro utilities that trick the computer into thinking you're pushing buttons, making menu choices, and hitting keys when you're actually just catching up on some much-needed sleep. Here's how to use CE Software's (http://www.cesoft.com) QuicKeys utility to open up an Internet connection, launch Outlook Express, collect your email, then shut down the connection again.



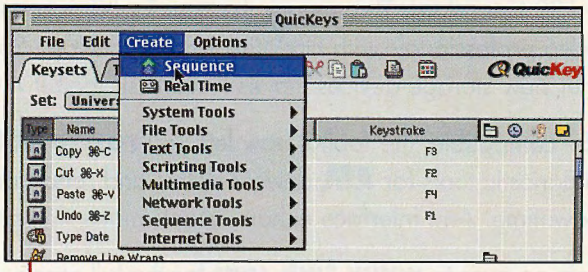
ILLUSTRATION BY PAUL GILLIGAN

Part One—Get Ready

1 Set Up QuicKeys to Create a Universal Sequence

You need to create a universal macro—one that's not attached to a specific application. To do this, open the QuicKeys Editor and select Universal from the Set menu.

Since this macro will have more than a single step, you should create what QuicKeys calls a Sequence. Select Sequence from the Create menu, then give the sequence a memorable title such as Email Check.

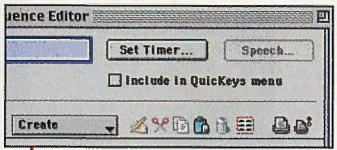


TAKE NOTE OF THE CREATE MENU. You'll find almost every component you need for your sequence in its submenus.

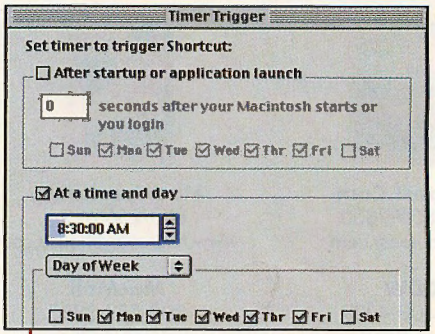
2 Set the Timer

You typically trigger a QuicKeys sequence by pressing a user-defined key combination, but in this case you want your sequence to run without any user intervention—that's the whole idea!

Use QuicKeys' Set Timer function to set the time of day and frequency for your sequence. Set it to run, say, every weekday morning at 8:30 a.m. (The ability to specify days of the week is new with QuicKeys 5.0.)



THE SET TIMER BUTTON appears in the upper right corner of the Sequence dialog box.



THIS WINDOW SHOWS UP when you click Set Timer, allowing you to schedule your sequence.

TERRORISM IS AT AN ALL-TIME HIGH.

COINCIDENTALLY, SO IS HIS JOB SECURITY.



What has the world come to?

Chaos. Danger. Drugs. Disease. Pollution. Conspiracy. Paranoia. For nano-technologically augmented terrorist agent JC Denton, it's just another day. Stealth, strategy, and action, unravel the conspiracy and save the world... and your own butt.

Deus Ex™









Order Now at:

www.aspyr.com 1-888-212-7797

Mac

EIDOS INTERACTIVE

ION STORM

ASPYR™

westlake INTERACTIVE

MATURE M CONTENT RATED BY ESRB

Animated Blood
Animated Violence

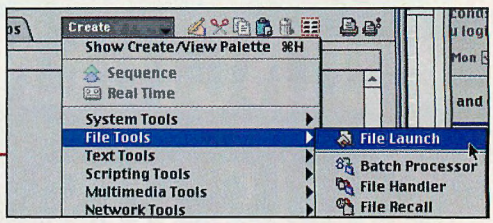
Deus Ex, ION Storm names and logos are trademarks of ION Storm, L.P. All Rights Reserved. ©1999, 2000 ION Storm. Eidos Interactive and the Eidos Interactive logo are registered trademarks of Eidos Interactive. ©1999, 2000 Eidos Interactive. The ratings icon is a trademark of the Interactive Digital Software Association. The Aspyr Media logo is a trademark of Aspyr Media, Inc. Macintosh is a registered trademark and the MacOS logo is a trademark of Apple Computer, Inc. All other trademarks are the property of their respective holders.

Part Two—Get on the Web

Now you're ready to start creating the sequence itself. The first thing you'll need is an open Internet connection. If you're lucky enough to have cable modem, DSL, or another always-on connection, skip ahead to Part Three. Those of you with old-fashioned modems have to create some additional actions to make the computer dial in before it gets your mail.

1 Open the Internet Connection

Use QuicKeys' File Launch under File Tools to open Remote Access. Select Remote Access in the dialog box that opens. (If you use a third-party application such as FreePPP, you'll follow the same basic procedure.)

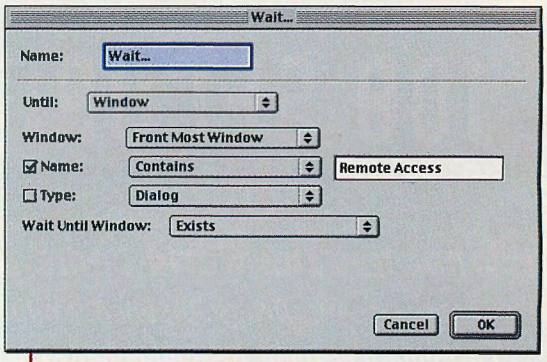


FILE LAUNCH WORKS EQUALLY WELL with applications, control panels, and files.

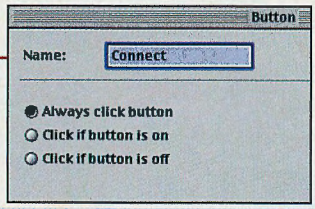
2 Click the Connect Button

You want to click Remote Access's Connect button next, but you must make sure its control panel has appeared before QuicKeys tries to click the button for you—otherwise the sequence will stop dead in its tracks. Choose Wait from the Sequence Tools submenu of the Create menu, then, under Name, choose Contains, and type Remote Access in the text field. This tells QuicKeys to wait until it sees the Remote Access window.

Use QuicKeys' Button command, located under System Tools, to tell QuicKeys to click the Connect button once Remote Access is up and running.



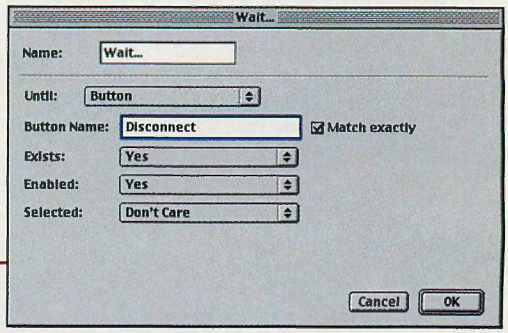
SINCE THE WINDOW APPEARS when the Remote Access application runs, you could just as easily create a Wait Until Application action, which would wait for the Remote Access control panel to open. Either method works fine.



MAKE SURE THE BUTTON action and the button itself have identical names, or this step won't work.

3 Wait for the Internet Connection to Go Live

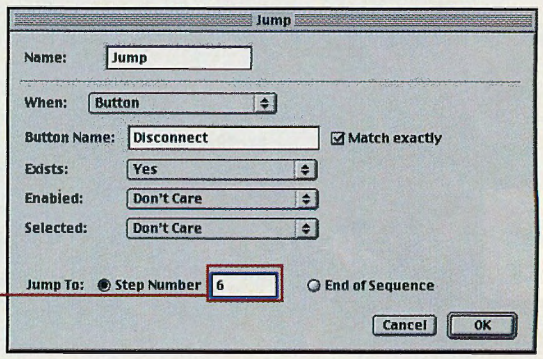
Since it can take a minute or so before the connection actually opens, you don't want QuicKeys to collect email immediately. How can QuicKeys tell when the connection goes live? The only visible indication is that Remote Access's Connect button turns into a Disconnect button. Use another Wait action to make the sequence wait to collect mail until the Disconnect button appears.



THE WAIT ACTION is an incredibly versatile tool—here, it waits until the Disconnect button appears.

4 Safe 'n' Sane Macros

You can bulletproof your sequence by having QuicKeys check first to see if your Internet connection is already open. You'll do this with a Jump action, which tells the script to switch to a specific step instead of proceeding sequentially. Insert a Jump action after step 2 to check for the Disconnect button. If the button exists, the sequence skips ahead to the step where your email client launches. Unfortunately, this step doesn't exist yet! For the moment, leave the Step Number field blank.



THE JUMP STEP should jump to step 6, but you haven't created it yet! You'll have to set this field later.



Programming Doesn't Have To Be This Difficult. It's REALbasic!

NEW Version! REALbasic 2.1* FREE Update!

REALbasic is the award-winning, visual, object-oriented BASIC development environment for the Macintosh.

REALbasic is powerful and easy to use. You can build anything from prototypes to complete professional quality applications for both Mac OS and Windows. Whether you are a hobbyist, a professional programmer, or someone who needs to build a program for a specific task quickly and easily, REALbasic is the tool for you!

Simply drag and drop user interface elements into your application's windows and dialog boxes to create anything from a small utility to a large application or the next great game—faster and easier than ever before. Experiment, explore, learn, and innovate as you build your applications step by step while REALbasic handles all the details for you so you can concentrate on what makes your software great—your ideas! With the Professional Edition you can even access most databases and create applications that run on Windows.

Go to www.realbasic.com NOW to download a FREE trial version or call 512.263.1233.

REALbasic®

Come see us at MacWorld New York — Booth #1907

MacPower 2000 Products of The Year

MacHome

Macworld

Apple Design Award

2000 Runner-Up - Best Macintosh User Experience

Mac Fan MVP '99 MOST VALUABLE PRODUCT

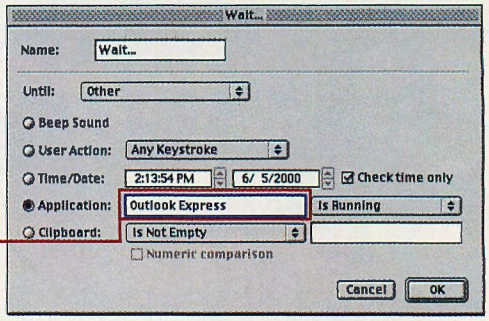
*Free update for all owners of REALbasic 2.0 and above. REALbasic and the REALbasic logo are trademarks of REAL Software, Inc. Apple and the Apple logo are trademarks of Apple Computer, Inc., registered in the U.S., used with permission. All other trademarks are the property of their respective owners.

Part Three—Collect Your Email

Drumroll, please. Now that your Internet connection is open, let's check for new mail!

1 Launch the Email Client

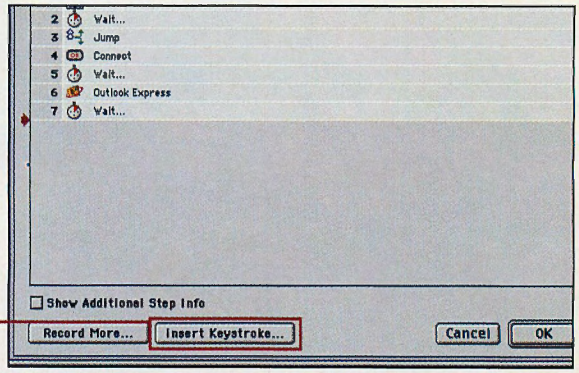
To open Outlook Express, create a File Launch action by selecting File Launch from the File Tools submenu under Create, then choosing Outlook Express in the dialog box that opens. Use a Wait action to make QuicKeys wait until Outlook Express is up and running. If you did Part Two, you can now return to the Jump step and enter the step number of the File Launch action (it's 6) in the Step Number field.



BE CAREFUL—a typo here will make the script wait forever!

2 Collect Your Mail

It's easy to tell Outlook Express to check for email—just press Command-M. To make QuicKeys simulate this keystroke, use the Insert Keystroke button. Once you click it, press the key combination that you want QuicKeys to simulate.

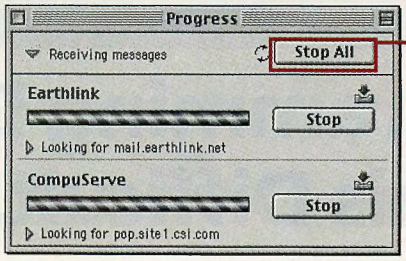


THE INSERT KEYSTROKE BUTTON appears in the lower left corner of the Sequence Steps dialog box.

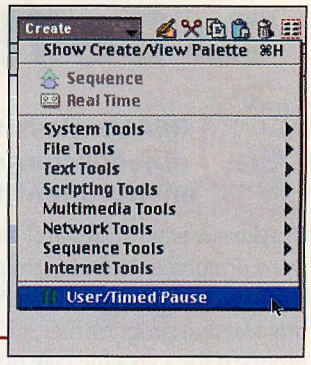
3 Know When to Quit, Part 1

Finally, you need to shut down the connection—but not until mail collection completely finishes. One crude method is to tell QuicKeys to wait, say, five minutes before closing the connection. It's a better idea to wait for Outlook Express to tell QuicKeys when it has finished transferring all your mail.

This will take some maneuvering, though, because no alert box appears when Outlook Express has downloaded all the mail. The key lies in Express's Progress window. When your mail finishes downloading, the various Stop buttons disappear. First have the sequence wait a second or so to make sure Outlook Express has time to put up the Progress window. Select User/Timed Pause from the Create menu, and set the pause to 1 second.



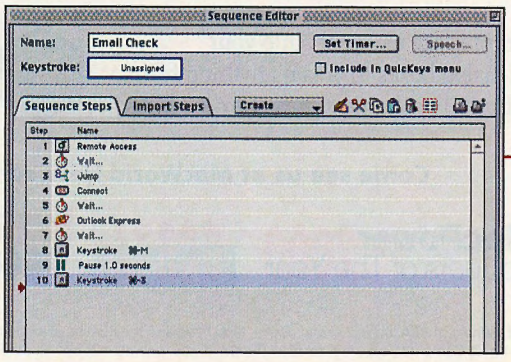
WHEN OUTLOOK EXPRESS FINISHES ITS TASK, the Stop All button will vanish.



TO HAVE QUICKEYS WAIT FOR A SPECIFIC period of time, use a Timed Pause action, not a Wait action.

4 Know When to Quit, Part 2

Next, you'll need to bring the Progress window to the foreground. To do this, choose Progress Window from Outlook Express's Window menu. You could accomplish this with a Menu action, but it's easier to create a Keystroke action for the menu item's keystroke equivalent, Command-3.



JUST LIKE LAST TIME—click the Insert Keystroke button. Then type Command-3.

THE WEB IS A **HAYSTACK.** WE'VE GOT THE **NEEDLE.**

Find the exact products featured in MacAddict with SeeMeBuyMe.

Call or click—it's simple as 1-2-3!

1) Visit seemebuyme.com and select MacAddict from the list of magazines, or call toll-free 888.220.1146.

2) Select the product you want and compare prices.

3) Instantly connect to online merchants carrying your product!

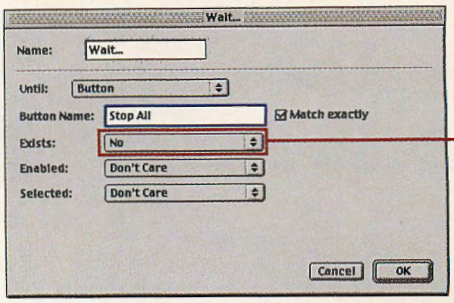
SeeMeBuyMe™

www.seemebuyme.com

888.220.1146

5 Know When to Quit, Part 3

Once you have the Progress window in the foreground, use a Wait action to tell QuicKeys to keep its eye on that Stop All button. Set the Exists option to No, and QuicKeys won't continue with the sequence until the Stop All button disappears.



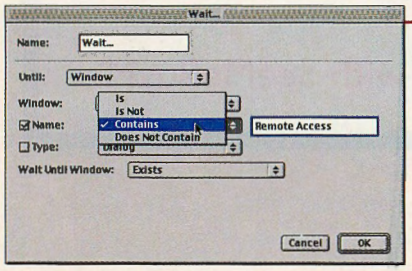
MAKE SURE YOU'VE SET the Exists option to No.

Part Four—Close Down the Connection

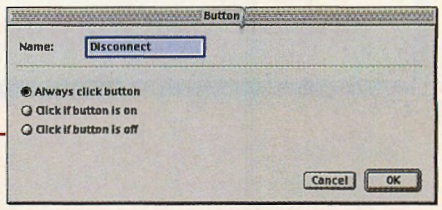
If you have an always-on Internet connection, you're done. Otherwise you need to close the connection once QuicKeys collects all your email.

1 Switch Back to Remote Access

Just as you did when you made QuicKeys dial in, create a File Launch action to switch back to Remote Access. Then use a Wait action to make QuicKeys wait until Remote Access appears in the foreground. Once you're back at Remote Access, use a Button action to have QuicKeys click the Disconnect button.



ONCE AGAIN, you could also use a Wait Until Application action to accomplish the same feat.

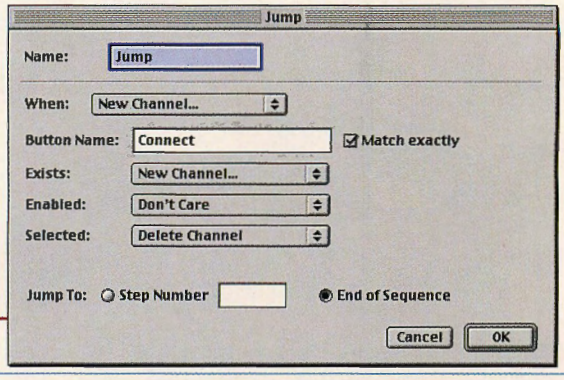


DON'T RENAME THIS STEP—its title must exactly match the name of the button or it won't work.

2 Safe 'n' Sane Macros Revisited

This is another good place to insert a little bulletproofing. Insert a Jump action (again, after the Wait action) to make QuicKeys jump to the end of the sequence if a Connect button exists (indicating that the connection has already closed).

UNLIKE OUR EARLIER JUMP ACTION, which skipped ahead to a specific step, this one simply skips to the end of the whole sequence.

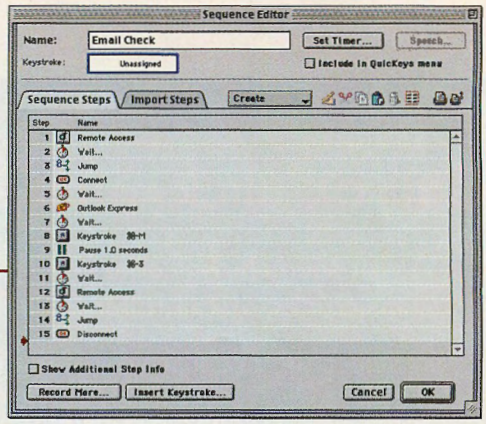


3 Final Check

You're done! Before you run the sequence, quickly double-check the macro to make sure you haven't made any obvious mistakes. Here's how QuicKeys should look when you display all the steps in your Check Mail sequence.

Remember to test the sequence by running it a few times while you watch—run it when you have mail waiting *and* when you don't. Also test it under different starting conditions—try it with the connection already open, for example, or with Outlook Express or Remote Access already open. If you hit a glitch, fine-tune your sequence.

CHECK YOUR FINAL MACRO TO WEED OUT any obvious errors before you run it.



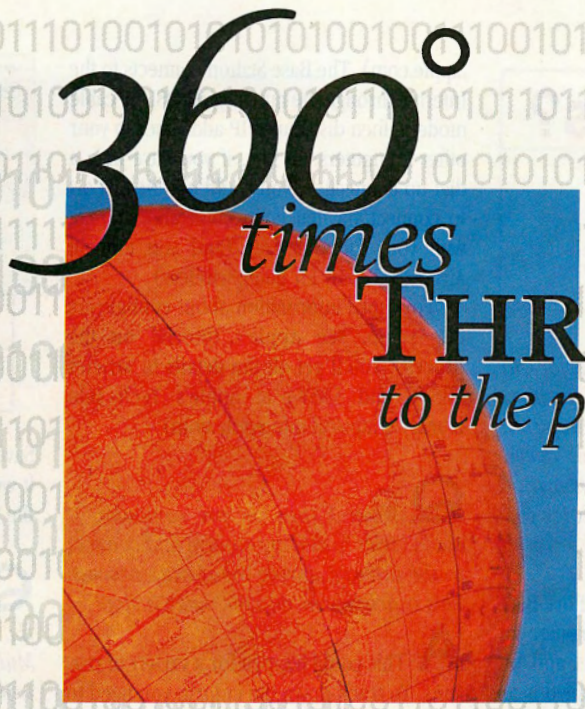
MacAddict Contributing Editor Joseph Holmes sometimes spends more time creating an elegant QuicKeys macro for a function than it would take to perform the same steps manually.

© 2000. VR Toolbox, Inc. The VR Worx is a trademark of VR Toolbox, Inc. Macintosh, QTVR, QuickTime and QuickTime VR are trademarks of Apple Computer, Inc., registered in the U.S. and other countries and used under license. Windows is a trademark of Microsoft, Corporation.

Announcing version 2.0 of The VR Worx, truly the greatest QTVR feature/function set in the world...

Partial Feature/Function Set

- Apple Scriptable and PC Scriptable
- Hyperstitcher
- Object Movie within Panoramic Movie Generation
- Multinode Transitions
- Optimized for the World Wide Web
- Fast-Start Panoramas for the Web
- Pano Image Import/Export at 10,000 x 3,000 pixels
- Built-In Image Editors
- Sound Support in Object Mode
- Chroma-Key Background Knockout
- Transparency Stitch Viewer
- Frame Based Animation
- Centering, Cropping, and De-Wobbling Effects
- Unlimited Hot Spots in all Modes
- Scene Module accepts Panoramas, Objects, Still Images and Linear Movies as Nodes
- Built-In Support for Mechanized Object Rigs
- Edit and Preview Multi-Node Scenes without having to render finished movie
- Build Panos and Objects from within the Scene Module
- Educational QTVR Curriculum
- Cross Platform Compatible

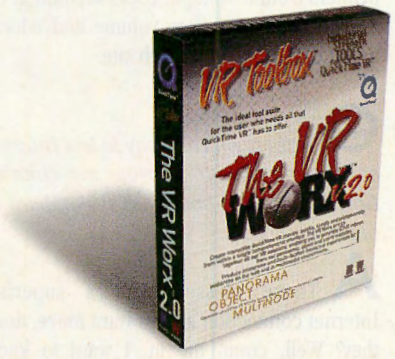


PANORAMA
OBJECT
SCENE

QuickTime™

The VR Worx

Optimized for the World Wide Web



all the QuickTimeVR the World has to offer...

■ The VR Worx™2.0, the upgrade to the suite of QuickTime VR™ authoring tools from VR Toolbox™. The VR Worx combines all our QTVR™ solutions into a single integrated interface, and creates the ideal tool suite for the user who needs all the QuickTime VR the World has to offer. The VR Worx gives you the ability to generate QTVR Panoramic movies, Object movies and Multi-node Scenes, involving advanced elements that push the QuickTime VR envelope. Built upon QuickTime™ 4 and available for both Macintosh™ and Windows™. The New 2.0 upgrade brings you a feature/function set unparalleled to date. Visit our web site for full-featured demos of all the VR Toolbox products.

for Macintosh & Windows

July 2000 Macworld NYC

June 2000 PC Expo NYC

1-877-878-6657 TOLL FREE

www.vrtoolbox.com

VR Toolbox™
Industrial Strength TOOLS for QuickTime VR™

ask us

A fistful of technical knowledge and a mean hankerin' for speed.

FIND EPSONMULTI-USERS9 and IPNetMonitor 2.4.3 on The Disc.

ASK AND ANSWER questions all day long at http://www.macaddict.com/debate.

Questions?

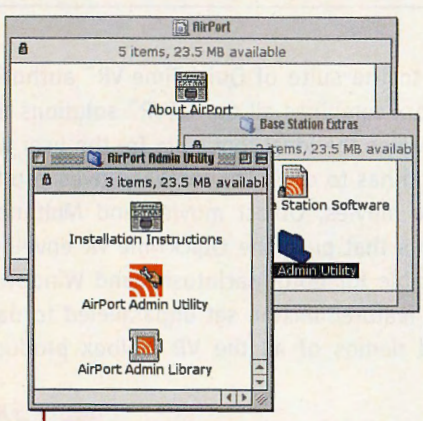
Submit technical questions or helpful tips directly via email (askus@macaddict.com) or c/o *MacAddict*, 150 North Hill Dr., Brisbane, CA 94005.

Q *I have a DSL connection for my computer at home and want to share Internet access with the other computers in the house. I know I need an access router, but I also want to use an AirPort for my son's iBook. Is there a device that can handle both of these needs?*

A But of course—Apple's AirPort Base Station itself can act as an access router for computers hooked up via Ethernet and for those operating wirelessly. All you need is an Ethernet hub and the AirPort Base Station. To set up the Base Station as an access router, first connect all your Ethernet computers to the Ethernet hub, then connect the AirPort and your cable or DSL modem to the hub. You may need to connect the modem with an Ethernet crossover cable, though most hubs have an uplink port that will work.

After you've connected all of the devices, use the AirPort Admin Utility from one of the computers to configure the Base Station. This utility is part of the AirPort 1.1 download from Apple's Software Update site (http://asu.info.apple.com). The Base Station connects to the Internet through the hub to your DSL or cable modem, then distributes IP addresses to your other computers. In fact, if you have only a dial-up connection, you could use the AirPort to connect via that connection and share it with your Ethernet LAN (and you thought AirPort was only for going wireless).

For more information about configuring this setup, see Apple's tutorial on the process. You'll get all the details in articles 58576 and 58584 at Apple's Tech Info Library (http://til.info.apple.com).



USE AIRPORT AS AN ACCESS ROUTER. You don't even need an AirPort card—you can use Ethernet.

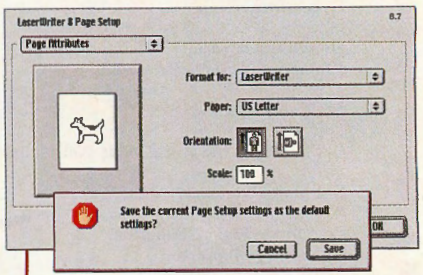
Q *When I turn on my computer, it always tries to dial my modem and connect to the Internet during the startup process. This is driving me crazy—make it stop!*

A This could happen for a variety of reasons. To track down the culprit, you need to know exactly when your modem tries to connect. If it happens as the extensions and control panels load across the bottom of your screen, you have a misconfigured extension or control panel setting. If it happens as the Finder loads, right before all your icons appear, some item in your Startup Items folder (located in the System Folder) is initiating the connection.

The most common cause for this occurrence, however, is a setting in the TCP/IP control panel. In Advanced User mode, you have the option to check or uncheck a check box labeled Load Only When Needed. If you leave this box unchecked, TCP/IP services attempt to load at startup, prompting your modem to start dialing. To stop the madness, simply make sure you have Load Only When Needed checked.

Q *I use special paper to print, and every time I print I have to reselect the page size in the Page Setup dialog box. How can I save my particular Page Setup configuration?*

A To save your Page Setup information as the default, open the Page Setup dialog box and select the options you want. Then hold down the Option key while clicking the OK button. You will see a dialog box asking if you want to save the information. Click Save. This may not work for all printers, but it works with most Apple printers as well as the LaserWriter 8 printer driver.



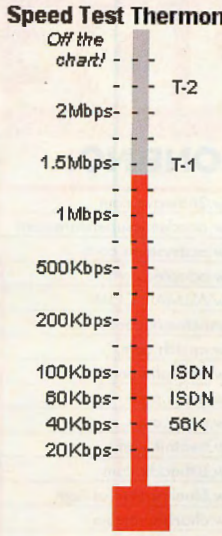
NEED TO SAVE THAT PAGE SETUP INFO? The key is the Option...um, key.

Q *I am a teacher at a middle school that uses Epson printers. We also use the Multiple Users feature of Mac OS 9 to control access to our iMacs. I get an error every time I try to print, unless I log on as the administrator. Why is this happening, and can I fix it?*

A Your problem arises from an incompatibility between the Epson driver software and Apple's software. The Epson software needs access to certain items that the Multiple Users security software blocks. Epson may or may not address this issue in the future, but in the meantime you can turn to a wonderful shareware solution. NiceBoy Software (http://www.epsonshare.com) created an application called EpsonMultiUsers9, which allows users to print to Epson inkjet printers from a Multiple Users account in OS 9. The company offers volume and educational discounts on its Web site.

Q *Is there an easy way to test Internet connection speed? I know my connection is fast, but how does it compare to other methods?*

A Those blessed with a superfast Internet connection always want more, don't they? Well, count me in. I want to know how my cable modem connection stacks up! One way to test your connection is with the amazingly informative Sustainable Softworks IPNetMonitor application (http://



SEE HOW YOUR CONNECTION STACKS UP at Computingcentral.com.

www.sustworks.com), which I have mentioned in this column before. You'll find a much more low-tech solution for checking the speed of your Net connection at http://www.computingcentral.com/topics/bandwidth/speedtest.asp. This MSN site tests your connection by downloading a single large file to your browser and timing how long it takes.

Q *I love my new G4, but when I play DVD movies the sound gets out of sync, making the movie unwatchable. Is my DVD drive broken?*

A This problem crops up commonly with DVD movie playback and many G4s. Luckily, it's not a hardware problem at all. It is a software problem, and better still, Apple knows what causes it and how to fix it. The reason this problem shows up with G4 computers is that they are the first models to use a software-only solution to decode DVD movies. Pre-G4 Macs required a special chip to perform this decoding. The audio sync problem is simply a software bug.

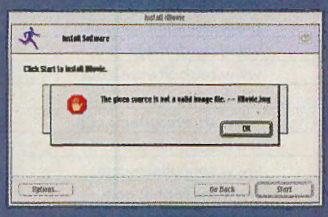
To find a remedy for your computer, you'll need three software updates, all of which you can download from Apple's software archive at http://asu .info.apple.com. First update your system software to Mac OS 9.0.4. Then download and install Apple DVD Player 2.2, and finally make sure you have QuickTime 4.1.1 or later. Once you have these three pieces on your system, you should be good to go! Keep in mind that you must treat the Apple DVD Player just like your other applications. To maximize DVD performance, you should turn off Virtual Memory, deactivate AppleTalk, and make sure no other applications are running.

Buz Zoller is a technology support specialist for a school district in Texas.

WHAT IS GOING ON HERE?

The answer is simpler than you think.

Say you try to install iMovie and you get an error that says, "The given source is not a valid image file. -- iMovie.img." Fear not—there's a simple solution. When you download a disk image file from your Web browser, StuffIt may actually decompress and mount the image. The engine behind the StuffIt action is Aladdin's Shrinkwrap, which mounts the image. The Apple installer will not run if you mount the image using Shrinkwrap. You can find out what mounted the volume—just check it with the Get Info command. To install iMovie, simply unmount the volume and double-click the SMI file so that Disk Copy mounts the image. The installer will now run correctly.



In the June issue, we recommended trashing the AppleShare Prep file in order to avoid the automatic log-in box at startup. We failed to mention that newer computers with Mac OS 8.6 or later use a different mechanism to achieve the auto log-in. In these systems, when you select the Mount At Startup check box, an alias to the volume appears in the Servers folder within the System Folder. If you no longer want these volumes to automount, simply throw away the alias!

Sew up a **SWEET DEAL.**

SeeMeBuyMe lists dozens of merchants for each product you see featured in

MacAddict

so you can compare prices, shipping, and availability on the spot.

SeeMeBuyMe will connect you to the online merchants carrying the EXACT products you see in MacAddict, so you can compare prices from dozens of merchants, get the best deal, and buy them fast! Call or click.

SeeMeBuyMe™

www.seemebuyme.com

888.220.1146

ADVERTISER INDEX

ADVERTISER	ADDRESS	WEBSITE	PHONE NO.	PAGE
2ndWave	3102 Oaklawn, Ste. 700	214.560.2290	www.2ndwave.com	73
Academic Superstore	111 West Anderson #D207	800-333-8571	www.academicsuperstore.com	127
ACD Systems	6703 Rajpur Place	250-544-6700	www.acdsystems.com	17
Adaptec	691 S. Milpitas Blvd	408-945-8600	www.adaptec.com	11
AllMac/We Fix Macs	2202 No. First Street	800-933-4962	www.ALLMAC.COM	127
Alpha Network	3655 Torrance Blvd., Ste. 440	(877) 393-HOST	alphanetwork.com	69
APS Technologies	22985 NW Evergreen Parkway	800-874-1341	www.apstch.com/	102.103
ArtGrafix	15 Tech Circle	(800) 443-4421	www.artgrafix.com	127
Aspyr Media	98 San Jacinto Blvd. Ste. 2060	512-708-8100	www.aspyr.com	9
Aspyr Media	98 San Jacinto Blvd. Ste. 2060	512-708-8100	www.aspyr.com	91
Beatnik	2600 S. El Camino Real	650-295-2300	www.beatnik.com	12.13
BitHeadz Inc.	4400 Capitola Road # 202	888-870-0070	www.bitheadz.com	121
Blue Line Studios	Hueningerst 18	011-41-61-322-5355	www.blueline-studios.com	127
Charismac	10000 Hill View Rd	530-885-4420	www.charismac.com	21
ClubMac	7 Hammond	800-258-2622	www.club-mac.com	110.111
Coast to Coast Memory	174 Willow Street	800-4-Memory	http://18004memory	124
Compu America	10435 Santa Monica Blvd.	800-533-9005	www.compu-america.com	127
Connectix	2955 Campus Drive	650-571-5100	www.connectix.com	85
Contour Design	354 North Broadway	1-800-462-6678	www.contourdesign.com	121
Data Memory Systems	24 Keewaydin Drive, Unit 5	800-662-7466	www.datamem.com	120
Digital Foto	150 North Hill Dr.	415.468.4684	www.digitalfoto.com	76
Dirt Cheap Drives	2201 Pine Drive	1-800-473-0962	www.dirtcheapdrives.com	118
Drive Savers	400 Bel Marin Keys Blvd.	800-440-1904	www.drivesavers.com	126
Eritech International, Inc.	213 N. Orange Street Unit C	800-808-6242	www.eritech.com	124
Extensis Corporation	1800 SW First Avenue Suite 500	503-274-2020	www.extensis.com	7
FWB Software	2750 El Camino Real	415-345-4300	www.fwb.com	89
Griffin Technology	80 Fesslers Lane	615-255-0990	www.griffintechnology.com	123
HireKnowledge	298 Bowling Green Drive	800-937-3622	www.hireknowledge.com	71
IK Multimedia	Via Canalino 5	1-800-747-4546	www.groovemaker.com	119
iMacButton	7081 No. Marks Avenue #104-283	559-438-8601	www.iMacButton.com	123
Image Solutions	385 Van Ness Avenue #110	1-800-352-3420	www.imagesolutions4U.com	123
Imation Corp	1 Imation Place 3N-51	888-466-3456	www.imation.com	59
Ink4Art	1121 Lewis Avenue	1-877-695-1477	www.Ink4Art.com	125
IOGEAR by ATEN	16560 Aston Street	949-250-1260	www.iogear.com	65
Keyspan	3095 Richmond Parkway #207	510-222-0131	www.keyspan.com	127
Leister Productions	P.O. Box 289	717-697-1378	www.leisterpro.com	126
Mac Power Sales & Service	1080 Blossom Hill Road, Suite E	888-275-POWER	www.macpowerinc.com	126
Mac Solutions	11933 WilshireBlvd.	800-873-3RAM	www.macsolutions.com	122
MACE Group/macally Peripherals	5101 Commerce Drive	800-644-1132	www.macally.com	120
MacMall	2555 West 190th Street	800-965-3282	www.macmall.com	114.115
MacMart Systems & Peripherals	15828 Arminta Street, Suite 2	800-600-2708	www.macmart.com	122
Mac Of All Trades	500 Bishop Street , Suite E3	800-304-4639	www.macofalltrades.com	126
MacResQ	5060 Commercial Circle #A	888-447-3728	www.macresq.com	125
Macs4U.com	7372 Prince Drive #101	1-800-224-5899	www.macs4U.com	126
Mac Sales	7900 East Greenway Road, Warehouse #1	888-622-7253	www.macs4sale.com	124
MacSoft (a GT Interactive Company)	2300 Berkshire Lane North	800-229-2714	www.wizworks.com/macsoft	79
MacSoft (a GT Interactive Company)	2300 Berkshire Lane North	800-229-2714	www.wizworks.com/macsoft	27
MacWarehouse	535 Connecticut Avenue	800-981-9192	www.warehouse.com/ma	104.105
MacZone	707 South Grady Way	800-304-0286	www.maczone.com	106.109
McGraw Publishing Peripherals	49 Hastings	800-883-9697	www.sittingmachine.com	123
MediaGuide	777 N. Santa Fe Drive	800-463-0686	www.mediaguide.com	124
MegaHaus	2201 Pine Drive	800-475-7531	www.megahaus.com	101
MicroMat Computer Services	8868 Lakewood Drive, Suite 273	800-829-6227	www.micromat.com	ibc
Microsoft	One Microsoft Way	(425)882-8080	www.microsoft.com/mac	ifc-01
Microsoft	One Microsoft Way	(425)882-8080	www.microsoft.com/mac	60-61
Miramar Systems, Inc.	10 East Yanonali Street	800-862-2526	www.miramarsys.com	67
Other World Computing	224 West Judd Street	800-275-4576	www.macsales.com	112.113
Power Max	6077A SW Lakeview Boulevard	800-441-6922	www.powermax.com	116
Power On Software	420 North Fifth Street, #830	612-317-0344	www.poweronsf.com	obc
PowerON Computer Services	4323 Anthony Court #1	800-673-6227	www.poweron.com	119
PrePress Consolidated Color, Inc.	12909 SW 133rd Court	1-888-402-2259	prepressmiami.com/ok	126
Random Eye Technologies, Inc	543 Richmond St West #215	1-800-726-4126	www.randomeye.com	121
REAL Software	3300 Bee Caves Road Suite 650-220	512-292-9988	www.realsoftware.com	93
See Me Buy Me	150 North Hill Drive	(877) 751-7467	readershop.com	77
Shreve Systems	1200 Marshall Street	800-227-3971	www.shrevesystems.com	117
Software Architects	19102 North Creek Parkway suite 101	425-487-0122	www.softarch.com	4
Sonnet Technologies	18004 Sky Park Circle	800-786-6260	www.sonnettech.com	23
studioZee	500 5th Avenue	406-495-0538	www.theZephIR.com	127
Virtual Ink (Mimio)	56 Roland Street Suite 306	877-my-mimio (696-4646)	www.mimio.com	34.35
VR Toolbox, Inc.	1 Hershey Road	877-878-6657	www.vrtoolbox.com	97
VST Technolgies	125 Nagog Park	978-263-9700	www.vsttech.com	25

Since 1987
MEGAHAUS
The Drive Authority

BEST BUY AWARD WINNER!

We've been making deals and satisfying customers for more than 13 years!

Here's this month's hot features. Check out more at www.megahaus.com/mac

USB Hard Drive

USB



20.4GB
Also avail in 6, 8 & 13 GB **$199**
For Mac or PCs! (USB20GB)

USB CDRW Drive

USB
CD Rewritable



4x4x32 USB **Ext. $279**
For Mac or PC! (USB4X4X32)

Hard Drive

Quantum



18.2 GB $509
SCSI Ultra 160 **Ext. $639**
Int. (TN318200LW) (TN318200LWX)

Hard Drive

Seagate



9.2 GB $339
SCSI Ultra 160 **Ext. $469**
Int. (ST39204LW) (ST39204LWX)

CDRW Drive Kit

YAMAHA



8x4x24 $249
SCSI-2 Kit
W/mastering soft. & 1 disk. **$289 Ext.**
Int. (YCRW8424WOW) (YCRW8424MX)

Sound Accessories

Flat Panel Speakers and Subwoofer System



Get the ultimate sound from your computer with our full line of hot new speakers, headsets & microphones. (LCS2416) $79

www.megahaus.com/labtec

Tape Drive

SONY



20-40GB $949
Ultra Wide SCSI DDS-4 **$1119 Ext**
Int. (SDT11000AI) (SDT11000XM)

2 Gig Jaz Drive

iomega.



2GB Jaz Drive $315 **2GB disks**
Ultra-2 SCSI **$85 each**
Ext. (JAZ2X) (JAZC2GIGPC)

HARD DRIVES

Quantum

Nobody Beats Us on Quantum... NOBODY!

ULTRA 160 SCSI Will work on older SCSI, Ultra Wide, Ultra-2 controllers.

9.1GB	7200	4MB	XC309100LW	$219
9.1GB	10,000	2MB	TN309100LW	$329
18.4GB	7200	4MB	XC318400LW	$345
18.2GB	10,000	2MB	TN318200LW	$509
36.7GB	7200	4MB	XC336700LW	$675
36.4GB	10,000	2MB	TN336400LW	$899

IDE ULTRA ATA/66

5.1GB	512K	5400	QML05100LA	$83
10.2GB	512K	5400	QML10200LA	$95
10.2GB	2MB	7200	QMP10200LM	$119
15.0GB	512K	5400	QML15000LA	$115
15.0GB	2MB	7200	QMP15000LM	$136
20.4GB	512K	5400	QML20400LA	$132
20.5GB	2MB	7200	QMP20500LM	$159
30.0GB	512K	5400	QML30000LA	$195
30.0GB	2MB	7200	QMP30000LM	$245

IBM

ULTRA SCSI

9.1GB	7200	2MB	IBM309170N	$219
18.2GB	7200	2MB	IBM318350N	$299

ULTRA WIDE SCSI

9.1GB	7200	2MB	IBM309170W	$219
18.2GB	7200	2MB	IBM318350W	$299

ULTRA-2 SCSI

9.1GB	7200	2MB	IBM309170U2	$219
18.2GB	7200	2MB	IBM318350U2	$299

ULTRA 160 SCSI

9.1GB	7200	4MB	07N3120	$249
9.1GB	10,000	4MB	07N3220	$329
18.2GB	7200	4MB	07N3110	$359
18.3GB	10,000	4MB	07N3210	$499
36.4GB	7200	4MB	07N3100	$725
36.4GB	10,000	4MB	07N3200	$839

IDE & IDE Ultra ATA/66

15.3GB	7200	2MB	07N3927	$149
20.5GB	7200	2MB	07N3928	$174
30.7GB	7200	2MB	07N3929	$229
46.1GB	7200	2MB	07N3931	$299
61.4GB	7200	2MB	07N3933	$459
76.8GB	7200	2MB	07N3935	$569

WESTERN DIGITAL

IDE Ultra ATA/66

6.4GB	5400	512K	WDAC64AA	$84
8.4GB	5400	512K	WDAC84AA	$95
10.2GB	5400	512K	WDAC102AA	$99
13.0GB	5400	512K	WDAC136AA	$115
15.3GB	7200	2MB	WDAC153BA	$135
20.5GB	5400	2MB	WDAC205AA	$135
20.5GB	7200	2MB	WDAC205BA	$169
30.0GB	5400	2MB	WDAC307AA	$192
45.0GB	5400	2MB	WDAC450AA	$275

Call about new 1394 drives and accessories from Western Digital. From 10GB starting at $289 and up. Call for details.

Ultra 160 SCSI PCI Card for the Power Mac
Gain the fastest performance of 320MB/sec dtr across 2 Ultra 160 SCSI buses. Connect up to 30 SCSI peripherals.
PowerDomain PCI Card™ (APD39160MAC) $419

HARD DRIVES

Seagate

ULTRA SCSI

9.2GB	7200	2MB	ST39216N	$229
18.4GB	7200	2MB	ST318416N	$339

ULTRA WIDE SCSI

9.2GB	7200	2MB	ST39216W	$229
18.4GB	7200	2MB	ST318416W	$339

ULTRA-2 SCSI

50.1GB	7200	1MB	ST150176LW	$869

Ultra 160 SCSI

9.2GB	7200	2MB	ST39236LW	$229
9.2GB	7200	4MB	ST39236LWV	$245
9.2GB	10,000	4MB	ST39204LW	$339
18.4GB	7200	2MB	ST318436LW	$339
18.4GB	7200	4MB	ST318436LWV	$355
18.4GB	10,000	4MB	ST318404LW	$495
36.7GB	10,000	4MB	ST336704LW	$895
36.7GB	10,000	16MB	ST336704LWV	$925
73.4GB	10,000	4MB	ST173404LW	$1469
73.4GB	10,000	16MB	ST173404LWV	$1529

IDE Ultra ATA/66

4.3GB	5400	512K	ST34313A	$79
10.2GB	5400	512K	ST310212A	$95
10.2GB	7200	2MB	ST310210A	$129
13.0GB	5400	512K	ST313021A	$109
15.3GB	7200	2MB	ST315320A	$143
17.2GB	5400	512K	ST317221A	$125
20.4GB	5400	512K	ST320423A	$131
20.4GB	7200	2MB	ST320420A	$163
30.6GB	7200	2MB	ST330630A	$199

Maxtor

IDE Ultra ATA/66

10.2GB	5400	512K	M91021U2	$96
15.3GB	5400	512K	M91531U3	$112
20.4GB	5400	512K	M92041U4	$126
20.4GB	7200	2MB	M52049U4	$162
30.7GB	7200	2MB	M53073U6	$205
40.9GB	5400	2MB	M94098U8	$225
40.9GB	7200	2MB	M54098U8	$269
61.4GB	5400	2MB	M96147U8	$299

2.5" IDE LAPTOP

6.0GB	9.5mm	Toshiba	MK6014MAT	$145
12.1GB	9.5mm	Toshiba	MK1214GAP	$232
18.1GB	12.5mm	Toshiba	MK1814GAV	$369
6.0GB	9.5mm	IBM	DA206000	$145
12.0GB	9.5mm	IBM	DA212000	$215
18.1GB	12.5mm	IBM	DA218000	$329
25.3GB	17mm	IBM	DA225000	$525

FIREWIRE NEW!

USB/PCI Board	#70HTL00060	$169
PCI Board Kit/Mac or PC	#70HTL13941	$89
PCMCIA CardBus for laptops	#70HTL00040	$105
Umax 1200 x 2400 dpi Flatbed Scanner w/bundled software:		
Firewire Scanner	#SPKG14006	$979
1394 Hub	#70HTL00030	$85
1394 Repeater	#70HTL00020	$45
15 Ft. Cable/6pin to 4 pin	#70CAB13943	$28
15 Ft. Cable/6pin to 6 pin	#70CAB13942	$30

www.megahaus.com/firewire

RAID



Enclosure holds 3 Hot Swappable SCA drives
Int. (SCA3DR-LVD)$259 Ext. (SCA3CSE-LVD) $329
We can custom configure a RAID system to your exact needs. Call one of our RAID experts at 800-786-5653.

CD ROM

• SCSI Internals • Call About Our Externals

Teac	CD532S	32X	85ms	$75
Plextor	PX32CS (caddy)	32X	85ms	$139
NEC	CDR3010	40X	85ms	$69
Toshiba	XM6401B	40X	85ms	$79
Plextor	PX40TS	40X	85ms	$92
Kenwood	UCR415	52X	90ms	$159

• WIDE SCSI •

Plextor	PX40TSUW	40X	85ms	$99

• IDE •

Teac	CD540E	40X	85ms	$46
NEC	CDR3000	40X	75ms	$45
Mitsumi	CRMCFX48X	48X	65ms	$45
Creative	SBCD52	52X	100ms	$45
Kenwood	UCR412	52X	90ms	$82
Kenwood	UCR421	72X	90ms	$115

• CD CHANGER •

Pioneer 24 X6 Disc Ext. SCSI (DRM6324X) $395

TAPE BACKUP

Capacity Native-Compressed	Max. Speed		Back Up Be Safe!
		• 4mm DAT •	
2-4GB	66MB/min	Seagate STD24000N	$419
4-8GB	30MB/min	Seagate STT28000N	$215
4-8GB	66MB/min	Seagate DDS-2 STD28000N	$519
4-8GB	90MB/min	Sony SDT7000AI	$519
4-8GB	60MB/min	HP C1599AI	$549
12-24GB	144MB/min	Sony DDS-3 SDT9000AI	$679
12-24GB	120MB/min	HP DDS-3 C1554AI	$719
20-40GB	288MB/min	Sony DDS-4 SDT11000AI wow!	$949
48-96GB	66MB/min	Seagate DDS-2 STL496000N	$2039
72-144GB	120MB/min	HP 6 tape load DDS-3 C5648A	$1989
		• EXABYTE 8mm DAT •	
7-14GB	120MB/min	ELIANT820	$1299
20-40GB	360MB/min	EXB8900	$2119
140-280GB	180MB/min	EZ17SWK	$4399
		• QUANTUM DLT •	
20-40GB	180MB/min	DLT4000	$1359
35-70GB	600MB/min	DLT7000	$3829
40-80GB	600MB/min	DLT8000	$3959

Visit www.megahaus.com for unbeatable deals on tape media!

ZIP, JAZ & OPTICAL

Iomega	
100MB Zip Ext SCSI/USB	$109/$119
250MB Zip Ext SCSI/USB	$145/165
2GB Jaz Internal SCSI	$308
2GB Jaz External SCSI	$315
1GB Jaz disk 2-4/5-9/10+	$80/77/75
2GB Jaz disk 2-4/5-9/10+	$85/80/77
Sony Magneto Optical	
5.2GB SCSI-2 Int. 4MB buffer (SMOF551)	$1399
5.2GB SCSI-2 Ext. 4MB buffer (SMOF551X)	$1539
5.2GB optical media (SMAX5.2) 1-4/5-9/10+	$83/80/77

We Appreciate Our Customers!

G3 UPGRADES



Upgrades for G3 Mini Tower Macintosh computers
Adaptec PCI SCSI card kit (A2906E) $55
30.0GB Hard Drive (QML30000LA) $195

MEDIA

Nobody Beats MegaHaus for CD media. Larger quantities available.

• CD RECORDABLE MEDIA •	Max Speed	
5 Pack [CDR74B-S]	8x	$6
20 Pack [CDR74B-20]	8x	$22
50 Pack [CDR74B-50]	8x	$50
100 Pack [CDR74B-100]	8x	$89
• New 80 MINUTE MEDIA! •		
5 Pack [CDR80-S]	8x	$9
20 Pack [CDR80-20]	8x	$25
50 Pack [CDR80-50]	8x	$57
100 Pack [CDR80-100]	8x	$104
• CD REWRITABLE MEDIA •		
Budget 5 Pack [CDR74WB-S]	4x	$8
Budget 20 Pack [CDR74WB-20]	4x	$22
Budget 50 Pack [CDR74WB-50]	4x	$56
Budget 100 Pack [CDR74WB-100]	4x	$104
5 Pack [CDR74W-S]	4x	$24
20 Pack [CDR74W-20]	4x	$77
50 Pack [CDR74W-50]	4x	$192
100 Pack [CDR74W-100]	4x	$389
• CD-R PRINTABLE SURFACE •		
Budget 5 Pack [CDR74PB-S]	8x	$8
Budget 20 Pack [CDR74PB-20]	8x	$22
Budget 50 Pack [CDR74PB-50]	8x	$54
Budget 100 Pack [CDR74PB-100]	8x	$95
5 Pack [CDR74P-S]	8x	$11
20 Pack [CDR74P-20]	8x	$47
50 Pack [CDR74P-50]	8x	$86
100 Pack [CDR74P-100]	8x	$169
• CD RECORDABLE PLATINUM MEDIA •		
5 Pack [CDR74PA-S]	8x	$10
20 Pack [CDR74PA-20]	8x	$31
50 Pack [CDR74PA-50]	8x	$72
100 Pack [CDR74PA-100]	8x	$134

OPTICAL MEDIA

Size & Description	*1-4*	*5-9*	*10+*
128MB, 3.5", 512K	$13	$9	$7
230MB, 3.5", 512K	$14	$10	$8
640MB, 3.5", 2048K	$21	$17	$15
650MB, 5.25", 1024K	$25	$23	$21
1.2GB, 5.25", 512K	$25	$23	$21
1.3GB, 5.25", 1024K	$26	$24	$22
2.6GB, 5.25", 1024K	$33	$29	$27
5.2GB, 5.25", 2048K	$70	$68	$64

• BACKUP TAPES •

	2-4	5-9	10+
4mm DAT 120M	$16	$13	$11
4mm DAT 125M	$31	$28	$26
8mm DAT 150M	$59	$57	$55
TR4	$29	$27	$25
TR5	$47	$45	$43
DLT TAPE			
DLTIII 10-20GB	$36	$34	$32
DLTIIIXT 15-30GB	$39	$36	$34
DLT IV 20-40GB	$69	$67	$65
DLT Cleaning Tape	$40	$39	$36

Nobody Beats MegaHaus on CD Media Pricing.... NOBODY

Since 1987
MEGAHAUS
The Drive Authority

1-800-475-7531

Sales lines open: M-F 8-8, Sat 9-3, CST

www.megahaus.com

Secure Ordering • Daily Specials • #1 Drive Store on the Web!

VISA MasterCard American Express Discover

2201 Pine Drive, Dickinson, Texas 77539
(281) 534-3919 Fax: (281) 534-6580

Prices & specifications subject to change without notice. Shipping charges are nonrefundable. Returns must be in new condition and in original packaging. Defaced items may not be returnable. No refunds on software or special orders (items not listed in ad.) All refunds subject to 15% restocking fee. All trademarks are registered trademarks of their respective companies. Personal checks held for clearance. We reserve the right to refuse any sale for any reason. Bundle price good only if sold at ad price. All warranties listed are manufacturer's warranty only. ©2000 MegaHaus, Inc.

APS TECH

Positive spin



APS SCSI CD-RW
$339.95
APS Pro2

APS CD-RW 12x4x32 SCSI
- Fastest max. record speed ever
- 32x read speed faster than most CD-ROMs
- Ultimate CD drive for content playback, distribution, backup

APS Tech proudly offers our fastest CD-RW drive ever. With 12x max. record speed, you can burn a full disc in only six minutes and send your projects out quicker. Ships with Toast for Mac, Easy CD Creator for PC, and Direct CD for PC to get you going right away.



APS FireWire CD-RW
$379.95
APS Pro2

APS CD-RW 8x4x24 FireWire
- Speedy CD-RW drive with convenient IEEE 1394 interface
- Hot-swappable, great for sharing among workstations

Take away the hassle of device IDs and terminators, and add unprecedented speed, ease-of-use and compatibility. What have you got? FireWire. The APS CD-RW 8x4x24 FireWire enables you to burn CDs faster than you ever imagined, not to mention an amazing buffer size of 4MB to minimize underruns. If you want to burn CDs with your new FireWire-based computer, order the APS FireWire CD-RW today.

Drive faster



$649.95
APS Pro2

APS 45GB FireWire Hard Drive
- Easiest connections ever – hot-swappable, no terminator or device ID
- Ideal for personal video storage and editing, large-scale imaging/graphics



$499.95
APS Pro

APS DVD-RAM
- Rewritable DVD discs with 5.2GB of storage for backup, archiving or digital video storage
- Reads virtually any CD at up to 20X speed



APS ST 73GB Ultra160 LVD SCSI
- 7200 rpm LVD drives offer you fastest reliability and performance
- 73GB for your most data-intensive creations

APS 73GB LVD $1,499.95
Internal Configuration

APS Ultra2 Wide / Ultra160 LVD SCSI Drives

Model	RPM	*Internal	APS Pro
APS ST 9GB Ultra160 LVD	7200	259.95	329.95
APS I 9.1GB Ultra160 LVD	10000	369.95	439.95
APS ST 9.1GB Ultra160 LVD	10000	369.95	439.95
APS I 18GB Ultra160 LVD	7200	399.95	469.95
APS ST 18GB Ultra160 LVD	7200	379.95	449.95
APS I 18GB Ultra160 LVD	10000	569.95	639.95
APS ST 18GB Ultra160 LVD	10000	539.95	609.95
APS ST 36GB Ultra160 LVD	10000	879.95	949.95
APS ST 50GB Ultra2 Wide LVD	7200	899.95	969.95
APS ST 73GB Ultra160 LVD	10000	1,499.95	1,569.95

Drives listed above carry a five-year warranty.

** Internal configuration does not include a mounting bracket. Intended as a replacement internal SCSI drive.*

APS USB and FireWire Hard Drives

Model	APS Pro2
APS 10GB USB Hard Drive	$169.95
APS 20GB USB Hard Drive	249.95
APS 20GB FireWire Hard Drive	399.95
APS 45GB FireWire Hard Drive	649.95
APS 40GB FireWire RAID	799.95

Drives on these pages are covered by the APS 30-Day Money-Back Guarantee.

APS CD-RW Drives

Model	Price
APS CD-RW 4x4x24 USB	$249.95
APS CD-RW 8x4x24 SCSI	299.95
APS CD-RW 12x4x32 SCSI	339.95
APS CD-RW 8x4x24 FireWire	379.95



$449.95
APS Pro

APS ST 18GB Ultra SCSI
- Sixth-generation Barracuda mechanism
- Perfect for design/publishing with an ultra-low price

APS Ultra SCSI Drives

Model	RPM	* Internal	APS Pro
APS ST 9GB	7200	$269.95	$299.95
APS ST 18GB	7200	399.95	469.95

Drives listed above carry a five-year warranty.

APS IDE Ultra ATA/66 Drives

Model	RPM	Internal
APS 10GB IDE	5400	$119.95
APS 20GB IDE	5400	149.95
APS 45GB IDE	7200	389.95
APS 75GB IDE	7200	599.95

Drives listed above carry a one-year warranty.

~ CLOSEOUT SALE ~

APS CD-RW 4x4x16 SCSI External	$199.95
APS Q 8GB Internal 5400 rpm IDE refurb	99.95
APS CD-RW 6x4x16 SCSI Ext. Pro refurb	199.95
APS I 9GB SCSI Ext. Pro 7200 rpm	259.95
Zip 250 Parallel Port Ext.	69.95
LaCie 6GB USB Hard Drive Ext EKO	159.95

While Supplies Last

For more information, visit us at:
www.apstech.com

Tools of the Trade

Back up more, backtrack less

APS Tech exclusive! Now each tape drive includes both Mac and PC Retrospect software.

APS HyperDAT® IV LVD

- Longer tape, higher density vault DDS-4 into corporate network backup
- 20GB native capacity, 2-3 MB/s transfers

New DDS-4 technology has increased capacity by 67% over DDS-3 and cut your backup time in half. And the HyperDAT IV can read and write to your DDS-3 and even DDS-2 tapes, so migration is easy. Also comes with a limited three-year warranty.



$1,149.95

APS Pro2 case with Retrospect software for Mac and PC

Zoom into focus

Canon ZR10 Digital Video Camcorder

- FireWire/IEEE 1394 DV terminal
- Analog line-in for making copies, preserving originals
- 10X optical zoom lens, 200X digital zoom



$899.95

Nikon Coolpix 800

- 8MB CompactFlash™ stores 200 images
- 2x optical zoom zeroes in on the action



$599.95

Digital Video Camcorders*

Model	Price
Canon XL1	CALL
Canon GL1	CALL
Canon Optura Pi	CALL
Canon ZR10	$899.95

Digital Cameras*

Model	Price
Sony Digital CyberShot DSC-S30	$499.95
Sony Digital CyberShot DSC-S50	599.95
Sony Digital CyberShot DSC-S70	799.95
Olympus C-2020 Zoom	699.95
Olympus C-3030 Zoom	999.95
Olympus C-2500L	1,499.95
Nikon Coolpix 800	599.95
Nikon Coolpix 990	999.95
EPSON PhotoPC 800	599.95
EPSON PhotoPC 750z	499.95

Displays*

Model	Price
Sony Monitors	
F-Series Monitor 19" Sony GDM-F400	$929.95
F-Series Monitor 21" Sony GDM-F500R	1,799.95
G-Series Monitor 19" Sony CPD-G400	649.95
G-Series Monitor 21" Sony CPD-G500	1,199.95
LaCie Monitors	
LaCie electron19blue	$669.95
LaCie electron22blue	1,299.95
Sony LCD Displays	
Sony Multiscan SDM-N50	$1,499.95
Sony Multiscan CPD-M151	999.95
Sony Multiscan CPD-L181	3,299.95

* These products are not covered by the APS 30-Day Money-Back Guarantee. Products are covered by their manufacturer's warranty.

Sony Multiscan SDM-N50 15" (viewable) LCD Display

- Incredible 1/2" thin screen, under six pounds
- Best of Show winner, COMDEX '99



$1,499.95

APS Tape Backup

Model	Price
APS NS-20 (Travan NS-20) SCSI PRO2	$499.95
APS HyperDAT® II (DDS-2) SCSI PRO	599.95
APS HyperDAT® III (DDS-3) SCSI PRO2	799.95
APS HyperDAT® IV (DDS-4) LVD PRO2	1,149.95
APS DLT8000 LVD	4,399.95
APS AIT PLUS Ultra Wide Pro	1,899.95
APS AIT II LVD Pro	3,799.95
APS AIT Autoloader Ultra Wide	3,799.95
APS AIT II Autoloader LVD	5,499.95
APS DDS-3 Autoloader SCSI	2,599.95
APS DDS-4 Autoloader LVD	3,499.95

Ships with Retrospect software for Mac and PC

Printers / Scanners

Model	Price
Printers	
EPSON Stylus Color 900 Printer	$399.95
EPSON Stylus Photo 1200 USB Color Printer	499.95
EPSON Stylus Color 1520 Printer	499.95
EPSON Stylus Color 3000 (Mac and PC)	1,249.95
EPSON Stylus Pro 5000 Color Printer	2,999.95
Scanners	
Nikon Coolscan III (LS-30) (Mac/PC)	$799.95
Nikon Coolscan 2000 (LS-2000)	1,599.95
UMAX Astra MX3 Flatbed Scanner	199.95
UMAX Astra 2400S Flatbed Scanner	299.95
UMAX PowerLook III w/ Trans. Adapter	1,199.95
UMAX PowerLook 1100 w/Photoshop	1,399.95
UMAX PowerLook 2100XL	2,199.95
UMAX Mirage II Flatbed Scanner	1,999.95

Power Management

Model	Price
APC Surge Station Pro 8	$32.95
APC Surge Station Pro 8 w/ 2 Tel	37.95
APC Net 8 Surge Station	33.95
APC Net 8 Surge Station w/ Net P	47.95
APC Line Conditioner, R-600 APC	99.95
APC Line Conditioner, R-1250 APC	129.95
APC BackUPS Pro 280S APC	134.95
APC BackUPS Pro 420S APC	229.95
APC BackUPS Pro 650S APC	269.95
APC BackUPS Pro 1000S APC	389.95
APC BackUPS Pro 1400S APC	499.95

* These products are not covered by the APS 30-Day Money-Back Guarantee. Products are covered by their manufacturer's warranty.

Mac OS is a registered trademark of Apple Computer, Inc. APS and APS Tech are registered trademarks. Other brand or product names are registered trademarks or trademarks of their respective holders.

- *30-day money-back satisfaction on all APS brand drives and accessories. Your risk is the cost of shipping. Monitors and 3rd party products carry warranties from their respective manufacturers.*
- *SCSI cables may be purchased separately.*
- *APS' warranty is a pass-through of the mechanism manufacturer's warranty which will be serviced by APS for one year. APS warrants APS branded enclosures, brackets and power supplies for a period of one year from the date of purchase and will, at its discretion, replace or repair products found to be defective according to the specific terms of the warranty accompanying the product.*
- *Refused orders subject to 20% restocking fee.*
- *International customers must pay for all shipping charges.*
- *Prices and specifications are subject to change without notice.*
- *Not responsible for typographical errors.*
- *Your APS Drive unit may contain one or more components that were in prior use, but which have been inspected and repaired or rebuilt as necessary. These components, if any are covered by the same warranty provisions, exclusions and limitations to the same extent, and on the same terms as otherwise "new" components.*
- *© 2000, APS Tech. All Rights Reserved.*

Call 800 - 947 - 8597

Corporate Sales (800) 395 - 5871 • International (503) 844 - 4600

5am - 10pm, Monday - Friday, 6am - 8pm Saturday - Sunday, Pacific Time

APS TECH

Advanced tools for digital visionaries™

MacWAREHOUSE®

YOUR #1 MACINTOSH™ DIRECT RESELLER – SINCE 1987!



FREE* MYST!
with any order from MacWAREHOUSE!
Ask for item #AAA0742.
*$3.95 shipping and handling applies. Shipped in promotional packaging. Hurry! Offer good while supplies last.

EPSON Stylus Color 850
EPSON
Only $129.95!*
REFURBISHED!
Item #RPR13559P
*Refurbished by the manufacturer to meet original factory specifications. While supplies last.



Palm IIIc Connected Organizer Palm III
Only $449!
Item #BND3825
- 8MB memory
- Serial kit included



New Color Display

Update QuarkXPress 4.1



Trade-up for only $299.95!*
Item #SID1004
QuarkXPress 4.1 Full Version: item #DTP1040, only $729.95.
*For PageMaker owners. Serial number required at time of purchase.

Apple iBook Special Edition
FREE† 64MB RAM!
after rebate. Installation fee required. Ask for item #AAP1113 and #INSTL10.
Only $1799!
Item #CPU1579
Lease It for $52/mo.§



- 366MHz G3 processor
- 64MB SDRAM (exp to 320MB)
- 6.0GB Ultra ATA/66 Hard Drive
- 24X max. variable CD-ROM Drive
- 56K Modem • 10/100 Base-T Ethernet
- 12.1" Active-Matrix Display

iBook 300MHz/G3 • 64MB SDRAM • 6.0GB Ultra ATA/66 HD • 24X max. var. CD • 56K modem
Only
Blueberry: Item #CPU1577
Tangerine: Item #CPU1578
$1599!

We accept these major credit cards:
MasterCard · VISA · American Express Cards · Discover Novus



Up to 500MHz!

Authorized Catalog Reseller

FREE† 64MB RAM!
after rebate. Installation fee required. Ask for item #AAP1114 and #INSTL10.



Power Mac G4s

- Up to 27.0GB Ultra ATA/66 hard drive
- Up to 256MB SDRAM (exp. to 1.5GB)
- Built-in DVD-ROM (CPU1574 and CPU1575) or DVD-RAM drives (CPU1576)
- Built-in 56K V.90 modem (CPU1574 and CPU1575)
- Built-in 100MB Zip drive (CPU1575 and CPU1576)
- 1MB Backside Level 2 Cache running at half the processor speed
- ATI RAGE 128 Pro AGP 2X graphics card with 16MB of SDRAM
- Built-in 10/100Base-T Ethernet
- Supports AirPort™ wireless networking (Airport card & Base Station sold separately)
- Three FireWire® ports

Model shown is CPU1576.

Choose the Power Mac G4 that's right for you!

Speed/Processor	400MHz/G4	450MHz/G4	500MHz/G4
SDRAM	64MB (exp. to 1.5GB)	128MB (exp. to 1.5GB)	256MB (exp. to 1.5GB)
Hard Drive	10.0GB Ultra ATA/66	20.0GB Ultra ATA/66	27.0GB Ultra ATA/66
DVD-ROM/RAM Drive	DVD-ROM	DVD-ROM	DVD-RAM
Modem	56K	56K	–
100MB Zip Drive	–	100MB Zip Drive	100MB Zip Drive
Item #	CPU1574	CPU1575	CPU1576
Price	Only $1599!	Only $2499!	Only $3499!
	Lease It for $47/mo.§	Lease It for $73/mo.§	Lease It for $102/mo.§

Apple PowerBook G3



FREE† 64MB RAM!
after rebate. Installation fee required. Ask for item #AAP1124 and #INSTL10.
Up to 500MHz!

400MHz G3 processor • 64MB SDRAM (exp. to 512MB)
• 6.0 Ultra ATA/66 HD • DVD-ROM Drive • 56K Modem
• Two FireWire® ports • Airport ready
• 14.1" Active-Matrix Display
Item #CPU1580 . . . Lease It for $73/mo.§ . . $2499

500MHz G3 processor • 128MB SDRAM (exp. to 512MB)
• 12.0GB Ultra ATA/66 HD • DVD-ROM Drive
• 56K Modem • Two FireWire® ports • Airport ready
• 14.1" Active-Matrix Display
Item #CPU1581 . . . Lease It for $102/mo.§ . . $3499

Apple® 17" Studio Display
Only $499!
Item #MON1044



- 17" screen (16" viewable image size)
- .25mm aperture grille pitch
- 1600 x 1200 @ 60Hz

Apple® 21" ColorSync Studio Display
Item #MON1043 . . Lease It for $44/mo.§ . . $1499!



VST 100MB Internal Zip Drive
Only $209.95!
Item #DR10799

Our sales representatives are ready to take your order 24 hours a day, 7 days a week. We accept most major credit cards. We offer overnight delivery to most areas for in-stock items ordered weekdays up to 12:00 midnight (EST) (or 11:00 pm (EST) if ordered via warehouse.com). CT, IL, NJ and OH residents, please add applicable sales tax. Shipping and handling charges apply.

Please contact one of our sales representatives or visit the Customer Service section of our web site at warehouse.com, to review our 30-day defective product return policy. Certain products must be returned directly to their manufacturers.

Micro Warehouse is not responsible for any typographical or photographic errors in this advertisement. Prices, policies and item availability are subject to change at any time. Manufacturer's warranties apply and therefore Micro Warehouse makes no product warranty, either expressed or implied, including without limitation, any warranty of merchantability or fitness for a particular purpose.

Copyright© 2000 Micro Warehouse, Inc. All rights reserved. All product names and images throughout this advertisement are trademarks or registered trademarks of their respective holders.

WAREHOUSE.com

YOUR #1 ONLINE SOURCE FOR TOP BRAND COMPUTER PRODUCTS!

Get your own Online Ordering Center at:
CorporateAdvantage.Warehouse.com



FREE†† EPSON Stylus 740 Printer!

COLOR!

Prints 6ppm black and 5ppm color!

after rebates, when purchased with any iMac! Ask for item #AAP1133



PLUS...



FREE† 64MB RAM UPGRADE!

on all PowerBooks, Power Mac G4s, iBooks & iMac DVs!

*After rebate. Installation fee required. Does not apply to reconditioned models.

Apple iMac DV



Only $1299! ea.

Lease It for $38/mo.§

- 400MHz G3 processor
- 64MB SDRAM (exp. 512MB)
- 10.0GB Ultra ATA/66 Hard Drive
- DVD-ROM Drive
- 56K Modem
- Optional Airport wireless networking
- ATI Rage 128 VR 2D/3D graphics accelerator with 8MB SDRAM (AGP 2X) • 2 FireWire® ports • 2 USB ports
- 15" color monitor • iMovie software

Blueberry: Item #CPU1493 Grape: Item #CPU1494
Lime: Item #CPU1496 Strawberry: Item #CPU1495
Tangerine: Item #CPU1497

Apple iMac DV Special Edition

Only $1499!

Item #CPU1498

Lease It for $44/mo.§



- 400MHz G3 processor
- 128MB SDRAM (exp. 512MB)
- 13.0GB Ultra ATA/66 Hard Drive
- DVD-ROM Drive • 56K Modem
- Optional Airport wireless networking
- ATI Rage 128 VR 2D/3D graphics accelerator with 8MB SDRAM (AGP 2X) • 2 FireWire® ports • 2 USB ports
- 15" color monitor • iMovie software

Apple iMac 350MHz



Only $999!‡

Item #CPU1492

Lease It for $29/mo.§

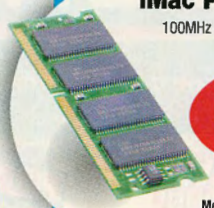
FREE†† EPSON STYLUS 740 PRINTER! after rebates. Ask for item #AAP1133.

- 350MHz G3 Processor
- 64MB SDRAM (exp. to 512MB)
- 6.0GB Ultra ATA/66 HD • 24X max. variable CD-ROM
- 56K modem • 15" color monitor
- Supports Airport™ wireless networking • 2 USB ports

‡Free memory offer does not apply.

iMac PC100 Memory

100MHz SDRAM for 350MHz and faster iMacs.



128MB only $249.95!

Item #CHP1039

Memory prices subject to change. Call for latest pricing.

Iomega Jaz 1GB External Drive

REFURBISHED!



Only $79.95!*

Item #RDRI1001

Jaz disks sold separately.

• SCSI-2 Interface • Transfer rate 10MB/sec

*Refurbished by the manufacturer to meet original factory specifications. While supplies last.

Mac OS 9.0.4



BONUS!* iTools from Apple with purchase of Mac OS 9.0.4 *see box for details

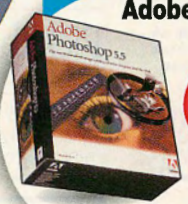
Only $99.95!

Item #SYS1068

FREE! software bundle with any Apple purchase!

Item #AAA1043. Shipped in promotional packaging. Good while supplies last. Call for details.

Adobe Photoshop 5.5



Upgrade for only $179.95!

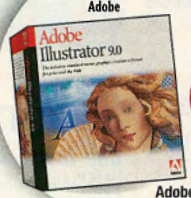
Item #UPG1049

Adobe Photoshop 5.5 Full Version: Ask for item #GRA2951, only $599.95.

Adobe

Adobe Illustrator 9.0 NEW VERSION!

Adobe



Upgrade for only $149.95!

Item #UPG1248

Adobe Illustrator 9.0 Full Version: Ask for item #GRA3325, only $389.95.

CALL FOR FREE COLOR CATALOG!





†Free 64MB RAM Upgrade AFTER MacWAREHOUSE $100 mail-in rebate when you purchase an Apple Power Mac G4, PowerBook G3, iBook or iMac DV. Price before rebate is $129.95. Installation fee of $29.95 required. Visit www.warehouse.com/rebate/macwarehouse for mail-in rebate coupon or call us at 1-800-390-0706 to request one. Offer not valid on purchase of 350MHz iMac, or any reconditioned Apple Computer. MacWAREHOUSE reserves the right to terminate this offer at any time. Offer expires 7/15/2000.

††Regular price: $149.95-$50 mfr's mail-in rebate=$99.95. Receive additional $99.95 mail-in rebate from MacWAREHOUSE with purchase of an iMac. Epson Stylus 740 Printer and iMac must appear on the same invoice. Rebate coupons available at www.warehouse.com/rebate/epson or call us at 1-800-390-0706 to request one. Free printer offer not valid on reconditioned iMacs. Offer good while supplies last!

§Leases are only available to business customers with approved credit on product orders where at least one product totals $750 or more. Lease payments are based on a 48-month Lease. Call today to see how you can qualify. Lease terms are subject to change.

1-800-972-9231

GET EXPRESS DELIVERY OVERNIGHT!

ORDER TOLL-FREE 24 HOURS A DAY, 7 DAYS A WEEK! CANADA ORDERS CALL: 1-800-603-5139

ONLINE: www.warehouse.com/ma In-stock items, call by midnight (E), or order online by 11pm (E) Mon-Fri.

macZone

the next generation of The Mac Zone

If you don't see it, The best deals

NEW VERSION!



Now Up-to-Date & Contact
Now OS 9 Compatible
$84.99
#112270

I.E. 5.0 for Mac now available!



Microsoft Office Upgrade for the Mac
$244.97*
#55870
*After $10 Zones rebate.

SAVE $40!



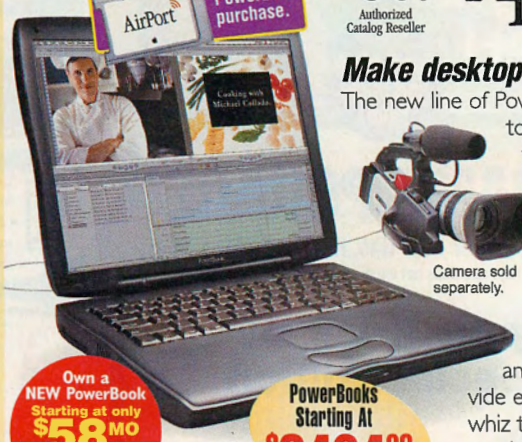
Norton AntiVirus 6
$19.88*
#652997
*After $40 mfr. mail-in rebate for previous owners.

SAVE $124!



StuffIt Deluxe, MacLink, FlashBack Bundle
$99.99
#111888

FREE!* $100 Value! AirPort Card with PowerBook purchase.



Authorized Catalog Reseller

Apple® PowerBook™

Make desktop movies anywhere!

The new line of PowerBooks makes it possible to do for digital video what the original Mac did for desktop publishing – bring the power of a production studio to the desktop or, in this case, to the laptop. G3 processors, 400 Mbps FireWire ports, ample hard drive space and large, crisp displays provide enough built-in muscle to whiz through compositing tasks, special effects and transitions. Produce professional, broadcast-quality video more easily and more affordably. For the results you want, when and where you want, order the PowerBook today!

Camera sold separately.

Own a NEW PowerBook Starting at only $58/MO with the Apple Loan Program! Call to apply today!

PowerBooks Starting At $2494.98

AppleCare Protection Plan — 90 days Standard — Get 3 YEARS of Apple Phone Support and much more. Call Now! PowerBook $298.96 #112696

Go Wireless!

Connect to your network and Internet with ease!

NEW! & IMPROVED



AirPort™ Base Station
ONLY $294.98 #115919
- Features 56K modem port and 10Base-T Ethernet port
- Supports up to 10 AirPort connections
- Easy to set up



AirPort™ Card
ONLY $99.98 #115920
- Wireless connections up to 150 feet
- 11 Mbps data rate

100MHz Bus Speed! DVD VIDEO USB FireWire

Pick the Apple PowerBook that's right for you!

Processor	Hard Drive	RAM Std/Max	Backside Cache	Optical Drive	Modem	FireWire	Display	Graphics	Item #	ONLY	Lease**
G3/400MHz	6.0GB Ultra ATA-66	64MB/512MB	1.0MB L2	DVD-ROM	56K	2 Ports	14.1" TFT	ATI RAGE 128 w/2X AGP	#116008	$2494.98	$88
G3/500MHz	12.0GB Ultra ATA-66	128MB/512MB	1.0MB L2	DVD-ROM	56K	2 Ports	14.1" TFT	ATI RAGE 128 w/2X AGP	#116009	$3494.98	$123

*FREE AirPort Card with PowerBook 400/500 purchase on same invoice. Offer subject to change. While supplies last. **Business Lease: 36-month, fair-market value lease based on approved credit. Other leasing options available. Leases require a minimum order of $1000. Call 1-800-611-9751 for details.

PowerBook Storage-To-Go

Compatible with NEW PowerBooks!



100MB Zip Drive — ONLY $199.99 #109510

SuperDisk Drive 120MB or Floppies — ONLY $579.99 #109516

10GB Exp. Bay Hard Drive — ONLY $199.99 #109512

VST



ONLY $349.99 #122560

NEW!

DeskJet 350C Mobile Color Printer

hp invent



Now at Mac Zone
ValueRAM™ BY KINGSTON

Best Deals For You!

32MB ValueRAM $39.99*
After $10 Rebate! #674335-PC100 #674337-PC66

64MB ValueRAM $59.99**
After $15 Rebate! #674339-PC100 #674373-PC66

128MB ValueRAM $119.99†
After $20 Rebate! #671988-PC100 #674325-PC66

*After $10 mfr. mail-in rebate. Low Zone price: $49.99. **After $15 mfr. mail-in rebate. Low Zone Price: $74.99. †After $20 mfr. mail-in rebate. Low Zone price: $139.99. Rebates good for a limited time. Call for details.

Scanners

One-touch, 42-bit color!
UMAX Astra MX3 Scanner



ONLY $129.99* #111169

Includes transparency adapter!
Epson 1200U Photo Scanner



ONLY $349.99 #111453

*After $30 mfr. mail-in rebate. Low Zone price $159.99. Offer expires 7/31/00.

First professional scanner with FireWire!
UMAX PowerLook 1100 FireWire



ONLY $999.99 #691469

42-bit scanning at home!
Microtek ScanMaker 3600



ONLY $89.98 #675035

Printers

SAVE $30!

Exhibition quality, desktop convenience!
Epson Stylus Photo 1270 Color Printer

NEW!



ONLY $499.99 #113866



ONLY $129.99* #111458

Epson Stylus 760 Color Inkjet Printer
*After $30 mfr. mail-in rebate. Low Zone price $159.99. Expires 7/31/00.

Sharp, clean, professional printouts from your iMac!
Epson 5700i USB Laser Printer



ONLY $349.99* #111461

*After $50 mfr. mail-in rebate. Low Zone price $399.99. Expires 7/31/00.

High-speed, network-ready printer
HP LaserJet 4050N USB Printer



ONLY $1129.99 #681512

we're open 24 hours a day 7 days a week

NO SURCHARGE ON CREDIT CARDS

Credit cards are not charged until the order is shipped. Most products ship the same day (barring system failure, etc.). Shipping options include Ground, 2nd Day and Overnight delivery. Freight is based on average product weight. Handling extra. Insurance available. Special orders may require special shipping and handling charges. Call for international shipping rates. Prices and product availability subject to change without notice. Specials and promotions may be limited to stock on hand. Not responsible for typographical errors. All products sold by Multiple Zones International (MZI) are third party products and are subject to the warranties & representations of the applicable manufacturers, including but not limited to Y2K compliance. Accordingly, MZI makes no representation or warranty with respect to Y2K compliance of product sold. ©2000 Multiple Zones International Inc. All rights reserved. Unauthorized duplication is a violation of applicable laws. Apple®, the Apple logo, Macintosh® and PowerBook® are registered trademarks of the Apple Computer, Inc.

go to Zones.com!
are here for you!



Final Cut Pro 1.2 combines professional editing, compositing, and special effects capabilities in one program!

ONLY $999.98 #114885

Apple® Power Mac™ G4



Apple Cinema Display sold separately. #116067

Own a Power Mac G4 Starting at only $38/MO with the Apple Loan Program! Call to apply today!

Power Macs Starting At $1594.98

USB FireWire zip 100

Desktop digital movie studio – and much more!

It's a movie studio, graphics workstation and power user's dream machine, all rolled into one. Focus your creative energy on the final result, not on what to do while the screen redraws. The Power Mac G4, with its Altivec Velocity Engine, easily plows through Final Cut Pro digital video effects, Photoshop filters, 3D graphics rendering, anything you can throw at it.

FREE!† Memory — $170 VALUE! 128MB Upgrade

†with any purchase of a G4, on the same invoice. While supplies last. Offer subject to change.

Kingston TECHNOLOGY — For Better Performance...Upgrade your Power Mac's Memory!

64MB Upgrade	#664941	$79.99
128MB Upgrade	#663365	$129.99††

Call for latest prices. ††While supplies last.

Pick the Power Mac G4 that's right for you!

Processor	Hard Drive	RAM Std/Max	Backside Cache	Optical Drive	Modem	Zip® Dr.	Item #	ONLY	Lease**
G4/400MHz	10.0GB Ultra ATA-66	64MB/1.5GB	1.0MB at 200MHz	DVD-ROM (read only)	56K Int.	–	#116013	$1594.98	$56
G4/450MHz	20.0GB Ultra ATA-66	128MB/1.5GB	1.0MB at 225MHz	DVD-ROM (read only)	56K Int.	Yes	#116014	$2494.98	$88
G4/500MHz	27.0GB Ultra ATA-66	256MB/1.5GB	1.0MB at 250MHz	DVD-RAM (read/write)	–	Yes	#116015	$3494.98	$123

**Business Lease: 36-month, fair-market value lease based on approved credit. Other leasing options available. Leases require a minimum order of $1000. Call 1-800-611-9751 for details.



Our #1 best selling Apple monitor
Apple 17" Studio Display (16" viewable)
~~WAS $494.98~~ – $150 INSTANT REBATE
NOW ONLY $344.98*
#109996

*Limited time offer. #109995 Apple Studio 21". $1494.98

AppleCare PowerMac Protection Plan

ONLY $248.96 #112694

~~90 days Standard~~ Get 3 YEARS of Apple Phone Support and much more! Call Now.

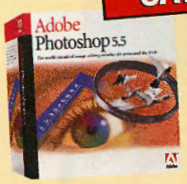
- ✔ TechTool Deluxe diagnostic software included to fix most problems – $69 Value
- ✔ Exclusive access to AppleCare Web support site
- ✔ Upgrade from 1 to 3 years of Apple-certified service, both parts and labor
- ✔ VALUE... Includes Apple Display coverage when purchased with a Power Mac G4 on the same invoice

SAVE OVER $400!



QuarkXPress 4.1 Comp. Upgrade
$298.98
#104526

SAVE $70!



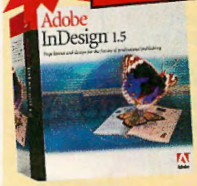
Photoshop 5.5 Upgrade
$179.97
#83084
Accelerated for G4!

NEW!



Macromedia Flash 4 FreeHand 9 Studio Upgrade
$184.99
#112186

NEW! DTP & Web Layout!



Adobe InDesign 1.5 Upgrade
$99.99
#117206

Storage

Over twice the storage of the original!
Iomega Zip 250 Portable USB Drive
ONLY $179.99 #650368



Versatile, hot-pluggable drive!
VST Portable 6GB FireWire Hard Drive
ONLY $399.99 #102786



Revolutionary interface boosts read and write speeds!
ONLY $399.99 #115183



QPS 8x4x24x Ext. FireWire CD-RW

Keep stocked up on affordable CD-Rs!
ONLY $29.99* #116186



Zones CD-R 80-minute 12X 50pk – Spindle
*After $5 mfr. mail-in rebate. Low Zone price $34.99.

Digital Video



ONLY $599.99 #648583

Two megapixels and fast response for your business!
Kodak DC280 Digital Camera

Includes a 1.4x converter and a USB Card reader! $170 value!



Olympus C-2500L Digital Camera
ONLY $1299.99 #111855

FREE GreatPhoto! #114716

3.34 megapixels!
Nikon Coolpix 990
NEW!



ONLY $999.96 #111188

Full-featured, ultra-compact and affordable!
NEW!



Canon Optura Pi Digital Video Camcorder
ONLY $1599.99 #117032

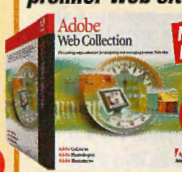
Essential Web Tools

Robust multimedia authoring package!



Director 8 Shockwave Studio Upgrade
ONLY $374.99 #112193

Design and manage premier Web sites!



Now includes Live Motion!
ONLY $999.98 #117232
Adobe Web Collection

Corporate bids welcome!
Fax to 1-888-239-2591
A NASDAQ® COMPANY Ticker Symbol: MZON

Source Code MA080

Order by Phone 1.800.304.0286

Order Online Today Zones.com™

macZone

the next generation of The Mac Zone

Authorized Catalog Reseller

Hot summer

Electronics
zones.com/electronics

Executive Essentials @ Zones.com



JVC FS-SD9 Mini Stereo System
ONLY $399.99 #117092



Motorola Advisor Elite Pager
ONLY $149.99 #122096



ONLY $89.98 #122186

Best Sellers!

FREE AppleWorks 6 T-shirt with purchase - $20 Va



The best integrated suite just got better!

ONLY $69.99 #116061 was $79.99

While supplies last.



SAVE $20!

#653343 $36.95*

*After $20 mfr. mail-in upgrade rebate. Low Zone price: $56.95.



SAVE $30!

Special Edition for the iMac & iBook

#648707 $79.99*

*After $30 mfr. mail-in rebate. Low Zone price: $109.99. Offer good through 7/31/00.



NEW Version!

Virtual PC 3.0 with Win 2000

#683680 $299.99

we're open 24 hours a day 7 days a week

NO SURCHARGE ON CREDIT CARDS



FREE! 30 Day EarthLink Internet Access‡ $30 Value!

FREE!* USB Scanner

FREE! Internet Explorer

iBooks Starting At $1594.98

Apple® iBook™

Have an iMac to go and a FREE* Scanner!

Building on the features of the enormously popular, number-one-selling notebook in the U.S., the new iBook line comes with twice the memory and hard drive capacity, as well as a new Special Edition model. Plus, Mac Zone is now delivering an AGFA 1212U USB SnapScan Scanner – a $100 value – along with your iBook.

Besides everything we love about the original iBooks – including the backpackable case, easy Internet access, latch-free closing, convenient carrying handle, 3D-munching ATI Rage Mobility chip, and exciting AirPort Wireless option – all of the new models sport 64MB of RAM (expandable to 320MB) and a six-gig Ultra ATA hard drive.



Plus, the iBook SE features sophisticated graphite accents and is driven by a 366MHz G3 processor.

Pick the Apple iBook that's right for you!

iBook Model	Processor	Hard Drive	RAM	Optical Drive	Modem	Ethernet	Ports	FREE SCANNER!*	Display	Item #	ONLY	Lease††
Special Edition	G3/366MHz	6.0GB	64MB	24X CD-ROM	56K	10/100	1-USB	Yes	12.1" TFT	#116012	$1794.98	$64
Tangerine	G3/300MHz	6.0GB	64MB	24X CD-ROM	56K	10/100	1-USB	Yes	12.1" TFT	#116011	$1594.98	$57
Blueberry	G3/300MHz	6.0GB	64MB	24X CD-ROM	56K	10/100	1-USB	Yes	12.1" TFT	#116010	$1594.98	$57

*FREE AGFA 1212U USB SnapScan Scanner with select iBook or iMac purchase - $100 Value. While supplies last. ‡Internet Access subject to EarthLink terms & conditions. Included with iBook software CD, in box, from Apple. Offer subject to change. ††Business Lease: 36-month, fair-market value lease based on approved credit. Other leasing options available. Leases require a minimum order of $1000. Call 1-800-611-9751 for details.

AppleCare Protection Plan 90 days Standard **Get 3 YEARS** of Apple Phone Support and much more. Call Now!
iBook $228.96 #112695

Power Up Your iBook with ValueRAM by Kingston

ValueRAM™ BY KINGSTON

Call for latest price! Subject to change.

32MB Upgrade #674337 $39.99*
64MB Upgrade #674373 $59.99**

*After $10 rebate. **After $20 rebate. Rebates good for a limited time, please call.



Trouble-free USB connections!
ONLY $59.99 #111991
Belkin 4-Port Stackable USB Hub with Click-on Flavors



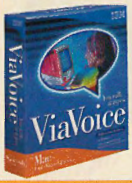
Desktop-quality printing on the road!
Infrared capabilities!
ONLY $299.99 #687476
Canon BJC-85



ONLY $79.99 #112631
Save time and enhance your multimedia experience!
USB iMediaKey



The mouse your iMac deserves!
ONLY $29.99 #31901
MacALLY iMouse USB Mouse



Like magic your speech becomes text!
NEW!
ONLY $74.99 #664668
IBM ViaVoice



True Digital Audio with multichannel surround sound excitement!
ONLY $99.99 #113218
Altec Lansing ACS495 3-piece Speaker System Refurbished



iMac Blueberry drive handles 1.44MB floppies!
ONLY $89.99 #112789
VST USB Floppy Drive



Upgrade to G3 without giving up a PCI slot!
ONLY $349.99 #28809
Sonnet Crescendo G3 400MHz PCI Card

Credit cards are not charged until the order is shipped. Most products ship the same day (barring system failure, etc.). Shipping options include Ground, 2nd Day and Overnight delivery. Freight is based on average product weight. Handling extra. Insurance available. Special orders may require special shipping and handling charges. Call for international shipping rates. Prices and product availability subject to change without notice. Specials and promotions may be limited to stock on hand. Not responsible for typographical errors. All products sold by Multiple Zones International (MZI) are third party products and are subject to the warranties & representations of the applicable manufacturers, including but not limited to Y2K compliance. Accordingly, MZI makes no representation or warranty with respect to Y2K compliance of product sold. ©2000 Multiple Zones International Inc. All rights reserved. Unauthorized duplication is a violation of applicable laws. Apple®, the Apple logo, Macintosh® and PowerBook® are registered trademarks of the Apple Computer, Inc.

deals and a free scanner!



FREE!* USB Scanner

FREE! Internet Explorer

FREE! A Bug's Life DVD movie with every iMac DV & SE! $30 VALUE! While supplies last.

iMacs™ Starting At $994.98

FREE! With iMac DV/SE models



iMovie™

Capture your vacation memories with DV!

Make your own video greeting cards, mini-documentaries, video book reports – whatever your creativity directs you to do – and complete them with titles and effects.

AppleCare Protection Plan 90 days Standard — Get 3 YEARS of Apple Phone Support and much more. Call Now! iMac $148.96 #112693

FREE!* Internet Explorer

with any Mac Zone purchase. Ask for #114042 *$1.99 Shipping & handling.



FREE!* USB Scanner



$129.99 Originally! AGFA SnapScan 1212U USB Scanner

*With select iMac or iBook purchase. While supplies last. Offer subject to change.

Power Up Your iMac with ValueRAM by Kingston

ValueRAM™ BY KINGSTON

For iMac 233/266/333MHz			For iMac 350/400MHz		
#674337	32MB	$39.99*	#674339	64MB	$59.99**
#674373	64MB	$59.99**	#671988	128MB	$149.99
#116657	128MB	$119.99†	#671989	256MB	$269.99††

*After $10 mfr. mail-in rebate. Low Zone price: $49.99. **After $15 mfr. mail-in rebate. Low Zone price: $74.99. †After $20 mail-in rebate. Low Zone price: $139.99. ††After $30 mfr. mail-in rebate. Low Zone price:$299.99. Offer good through 6/30/00. Call for latest price!

Canon

Superior connectivity and quality – plus digital stills!

ZR10 Digital Video Camcorder!



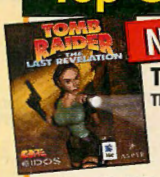
ONLY $899.99 #117041

Pick the Apple iMac that's right for you!

Model	Processor	HD	RAM	Optical	USB	FireWire	AirPort Ready	FREE iMovie	FREE Scanner*	Item #	ONLY	Lease†
Blueberry/350	350MHz	6.0GB	64MB	CD	2 ports	No	Yes	No	–	#112623	$994.98	–
Strawberry DV	400MHz	10.0GB	64MB	DVD-ROM	2 ports	2 ports	Yes	Yes	Yes	#112620	$1294.98	$46
Lime DV	400MHz	10.0GB	64MB	DVD-ROM	2 ports	2 ports	Yes	Yes	Yes	#112621	$1294.98	$46
Tangerine DV	400MHz	10.0GB	64MB	DVD-ROM	2 ports	2 ports	Yes	Yes	Yes	#112618	$1294.98	$46
Grape DV	400MHz	10.0GB	64MB	DVD-ROM	2 ports	2 ports	Yes	Yes	Yes	#112619	$1294.98	$46
Blueberry DV	400MHz	10.0GB	64MB	DVD-ROM	2 ports	2 ports	Yes	Yes	Yes	#112622	$1294.98	$46
Special Edition DV	400MHz	13.0GB	128MB	DVD-ROM	2 ports	2 ports	Yes	Yes	Yes	#112624	$1494.98	$53

*FREE AGFA 1212U USB SnapScan Scanner with select iBook or iMac purchase. Offers subject to change. While supplies last. †Business Lease: 36-month, fair-market value lease based on approved credit. Other leasing options available. Leases require a minimum order of $1000. Call 1-800-611-9751 for details.

Top Games!



NEW! Tomb Raider: The Last Revelation ONLY $39.99 #701822

Madden NFL 2000 #111576	$29.99
Tomb Raider III #111573	$29.99
The Big Kahuna #108263	$48.99
SimCity 3000 #111560	$44.98
Rainbow 6 #111566	$44.99
Myth: The Total Codex #662611	$19.99
Descent 3 #625849	$19.99
Age of Empires #111565	$29.99
Total Annihilation Gold #111567	$34.99
Fly! #112108	$19.99
Railroad Tycoon II #111561	$34.99
ChessMaster 6000 #653212	$34.99
Quake III Arena #112118	$44.99
Unreal Tournament #111907	$44.99
Bugdom 3D for the Family #114493	$29.99
Sid Meiers Alpha Centauri #111574	$44.98
Baldur's Gate #625850	$44.99

New from Sony!

Capture beautiful video & digital still images!



ONLY $1249.99 #122086

Sony DCR-TRV11 Digital Video Handycam Camcorder

Image is representational only.

Store images on inexpensive floppy discs!



ONLY $699.99 #694142

Sony Mavica FD85 Digital Camera

Gain the flexibility of digital & analog recording!



ONLY $2299.99 #111848

Sony TRV900 Digital Handycam Camcorder

Get excellent photo quality using innovative features!



ONLY $499.99 #117019

Sony Cybershot DSC S-30 Digital Camera



Compact USB connectivity!

ONLY $29.99 #636443

MacSense Mini-hub

#1 selling iMac printer!



ONLY $129.99* #107815

Epson Stylus 740i Color Inkjet Printer

*After $50 mfr. mail-in rebate. Low Zone price: $179.99. Offer good through 7/31/00.



Use floppy disks and add 120MB storage!

ONLY $149.98 #109035

Imation USB SuperDisk Drive 2X



Tote your iBook and all your stuff!

ONLY $59.99 #503773

Targus LapPac5

Corporate bids welcome!
Fax to 1-888-239-2591

A NASDAQ® COMPANY Ticker Symbol: MZON

Source Code MA080

Order by Phone 1.800.304.0286

Order Online Today Zones.com™

Authorized Catalog Reseller

ClubMac®

FREE* MEMORY!
OR Canon BJC-2100 Printer
WITH PURCHASE OF SELECTED IMAC'S

POWER MAC G4

New!
Now up to 500MHz
Starting At $1594

POWERMAC G4's		
400MHz	A102 1775	$1594
450MHz	A102 1758	$2494
500MHz	A102 1759	$3494

FREE!* 128MB Memory Upgrade

*Free with Purchase of Any Power Mac G4 listed in this Ad.
$30 Installation Fee Applies. Expires 8/1/00 or while supplies last.

iMac DV SE
Graphite Special Edition

FREE!* 64MB RAM Upgrade or Canon BJC-2100

400MHz!
Only! $1494

*$30 Installation Fee Applies to Memory. Canon BJC-2100 Printer Free After $50 Mail-in Rebate. Offer Valid with iMac DV SE Only. Expires 8/1/00

iMac DV 400MHz!

in 5 Colors

FREE!* 64MB RAM Upgrade or Canon BJC-2100

$1294

*$30 Installation Fee Applies to Memory. Canon BJC-2100 Printer Free After $50 Mail-in Rebate. Offer Valid with iMac DV 400's Only. Expires 8/1/00

Blueberry iMac 350 Mhz

$994

PRINTERS

EPSON Stylus 760
$129* *After $30 Mail-in Rebate Expires 7/31/00
E047 1080

EPSON Stylus 1270
6 Color Photo Printer $499
E047 1084

HEWLETT PACKARD Deskjet 932C
$199.99
H047 1203
USB

MONITORS

SONY
$339 S106 1117
E210 17" FLAT CRT
- 17" FD Trinitron Display (16"visible)
- .24mm-.25mm var. AGP
- Max Res.1600x1200@60Hz

Apple® Studio Display
$499* A106 1401
17"
- 17" Diamondtron CRT (16"visible)
- .25Dot Pitch
- Max Res.1600x1200@85Hz

MITSUBISHI DISPLAY PRODUCTS
$489 M246 1060
Diamond Plus 91 Natural Flat CRT
- 19" Natural Flat CRT (18"visible)
- .25-.27mm AGP
- Max Res. 1600x1200@75Hz

ViewSonic®
$499 V056 1114
PF790 19" FLAT CRT
- 19" Flat CRT (18"visible)
- .25 AG
- Max Res.1600x1200@60Hz

STORAGE

ClubMac FireWire 8x4x32x CDRW $369 C104 5120

ClubMac $399 C104 1714 DVD RAM Drive

Quantum FireBall LM Series IDE Up to 30GB As Low As $125

ClubMac 30GB FireWire Drive $399 C104 5106

ClubMac SCSI 8x4x24x CDRW $299 C104 4027

IBM ULTRASTAR 18ES 9.1GB 50 Pin SCSi $259/$329 Int. / Ext. I014 1080

ClubMac DDS-3 DAT 12-24GB $735 C104 1304

Iomega ZIP 250 USB DRIVE $158.95 I044 1041



CALL 1-800-217-9208 FOR A FREE CATALOG

WARRANTIES: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. MONEY BACK GUARANTEE: All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. RETURNS: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused. ALL PRODUCT INFORMATION AND PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS.

FREE* 128MB Memory Upgrade

FREE!* 64MB of RAM or Canon BJC-2100 Printer

Authorized Catalog Reseller

POWERBOOK G3 New!

up to 500Mhz!

Starting At $2494



Camera Sold Separately

Now Includes FireWire

400MHz	A102 1760 64MB RAM 6GB HD DVD-ROM	$2494
500MHz	A102 1761 128MB RAM 12GB HD DVD-ROM	$3494

*$30 Installation Fee Applies to Memory. Only Valid on PowerBook's in this Ad. Expires 7/1/00

iBook SE New! Graphite

366MHz Only

$1794

A102 1763



Also Available in Blueberry & Tangerine!

A102 1764	Blueberry iBook 300Mhz 64MB RAM 6GB 56k	$1594
A102 1765	Tangerine iBook 300Mhz 64MB RAM 6GB 56k	$1594
A102 1763	Graphite iBook SE 366Mhz 64MB RAM 6GB 56k	$1794

*$30 Installation Fee Applies to Memory. Canon BJC-2100 Printer Free After $50 Mail-in Rebate. Only Valid on iBook's in this Ad. Expires 8/1/00

USB SOLUTIONS

Eskape Labs MY TV USB TV Tuner $168.95 E143 1001

ClubMac USB Drives As Low As $158* *10GB C104 3020

VST Technologies Incorporated USB Floppy Drive $79.95 V054 1075

Contour Design Uni-Mouse USB 3-button programmable mouse $29.95 C115 1012

macally USB iMedia Multimedia Keyboard $59.95 M450 1038

Orange Micro Inc. FireWire USB PCI Card $159 0140 1266

macally PCI to USB Adapter USB ADAPTERS $35.95 M450 1029

TARGUS Top loading Notebook case $49.95 T050 1083

Graphics & Video Cards

ATi Xclaim VR 128bit 16MB w/TV Tuner Accelerator $169* A143 1083 Xclaim VR 128, 16MB 2D/3D Accelerator

*After $30 Mail-in Rebate

Formac 16MB Video Card $269 F153 1033 Formac Proformance Plus 3 Video Card

FREE* MEDIA!!!



IMATION 4X CDR 74 Min Media 5-Pack FREE!*

Price is $4.99 Before Rebate

After $5 Mail-In Rebate Limit 4 Per Household

I220 1070 Imation 4x CDR 74min Media 5-Pack $0

While Supplies Last or 6/30/00. *After $5 Mail-In Rebate

HOT! SOFTWARE - COOL PRICES!

Mac OS 9.0 $88.95 A109 1443

Aladdin Systems Stuffit Deluxe 5.5 $54.95* A290 1030 *After $25 Mail-in Rebate. Ask your Sales Rep for details!

Intuit Quicken 2000 Back for the Mac! *After $20 MFR Mail-In Rebate for Previous Owners $39.95* I039 1063

Illustrator 9.0 Adobe New! Upgrade Only $139.95 A030 1353

QUARK XPress 4.1 As Low As $297* Q069 1017 * Competitive upgrade for Adobe Pagemaker users only. You must have a valid PageMaker serial number.

Microsoft Office 98 Macintosh Edition $258.95 M089 1510

Connectix Virtual PC 3.0 with Win 98 Windows 2000 and Linux version now available! $179.95 C149 1055

Adobe Photoshop 5.5 Upgrade $189.95 A030 1279

NO SURCHARGE

SOURCE CODE 62080

ClubMac®

ORDER TODAY! 24 HOURS A DAY 7 DAYS A WEEK

1-800-217-9208

ORDER ON-LINE

WWW.CLUBMAC.COM

Sales
24 Hours a Day, 7 Days a Week ..(800) 217-9208
Customer Service
M-F 6am-7pm, Sat. 8-12 Noon PST (800) 551-6398
Inquiries & International Sales
24 Hours a Day, 7 Days a Week ..(949) 768-8130

24-Hour Fax.....(949) 768-9354
Corporate/Educational Sales
M - F 6am - 6pm PST.....(800) 258-2621
Technical Support
M - F 6am - 6pm PST.....(800) 854-6227

E-Mail: ClubMac Sales cmsales@clubmac.com
Customer Service ...custsvc@clubmac.com
Technical Support....techsup@clubmac.com

Mail: ClubMac.....7 Hammond, Irvine, CA 92618

School/University/Government/Corporate Purchase Orders Gladly Accepted (subject to credit approval)

Our Website has 24hr. Online Ordering, Full Info, Daily Updated Prices & Specials

Open Monday-Friday: 9am-8pm & Saturday: 10am-5pm CST E-Mail Us at: owc@macsales.com

other World Computing

Serving the Mac Universe Since 1988

VISA MasterCard AMERICAN EXPRESS DISCOVER C.O.D.

800-275-4576

FedEx Federal Express

Competitive Prices, Quality Products and NEVER a Surcharge for Credit Cards!



OWC has the G3 and NEW G4 Upgrades Your System Deserves!



Upgrade Today and get $$$ back for your old processor! visit www.fastermacs.com or call for details

SONNET Cresendo Nubus Series from $239

Upgrades For PowerMac 6100/7100/8100/8150/9150/ Radius; Performa 611X Series

G3/240-266mhz 512k - $239 G3/240-266mhz 1mb - $295
G3/300mhz 1mb - $339 G3/400mhz 1024k - $485
G4/270-360mhz AltiVec - $565

SONNET SIMPLY FAST

SONNET Cresendo PCI Series from $239

Upgrades for PowerMac7300/7500/7600/8500/8600/9500/9600s; WGS 7350/8550/8650/9650; PowerCenter/Wave/Tower; UMax S900/J700

G3/300mhz 512k - $185 G3/350mhz 1024k - $339
G3/400mhz 1024k - $385 G3/500mhz 1024k - $579
G4/350 AltiVec 1024k $399 G4/400 AltiVec 1024k $597

SONNET Banker G3 Series from $198

G3 Upgrades for PowerMac 4400/5500/ 6360/6400/6500/ 20th Anniversary Mac; PowerBase; Umax C500/600 StarMax 3000/ 4000/5000 Series; Most Motorola Clones

G3/250mhz 512k-$193.25 G3/300mhz 512k - $229
G3/350mhz 1024k- $339 G3/400mhz 1024k- $475
G3/500mhz 1024k- $675

Your Mac Now and After a G3 Upgrade from OWC

CPU scores based on MacBench 4.0





ZIF-POWER!

COMING SOON!

G3 G4 G4 DUAL

XLR8 by INTEREX

Interex XLR8 ZIF Carrier PCI DaughterCards

Upgrades for PowerMac 7300 / 7500 / 8500 / 8600 / 9500 /9600s; WGS 7350 / 8550 / 8650 / 9550 / 9650; PowerComputing PowerCenter / PowerCenterPro / Tower / TowerPro /Wave ; UMax S900 / J700

ZIF Carrier Card without ZIF Processor* $135
ZIF Carrier with OWC Mercury G3/266mhz 1024k Cache.... $175
ZIF Carrier w/ OWC Mercury G3/400mhz 1024k $375
ZIF Carrier with OWC Mercury G3/500mhz 1024k Cache.... $699
PowerLogix Zforce with G3/400mhz-1Mb OWC Mercury $337
PowerLogix Zforce with G3/300mhz-1Mb OWC Mercury $225
PowerLogix Zforce with G3/300mhz-512k OWC Mercury $195

UPGRADE WITH A G3 NOW AND PUT A G4 ON IT LATER!

*XLR8 ZIF Carrier will work with the same ZIFs of the Apple G3 PowerMacs. Upgrade your G3 PowerMac with a new ZIF and put the old ZIF on an XLR8 Carrier Card!

Eddy Award Winner MacWorld SF 2000

Product of the Show MacWorld NewYork'99



ZIF-POWER!

Call for G3 and G4 ZIF Upgrades for all G3 Beige and G3 Blue/White PowerMacs!

500mhz currently in stock and available!

Starting at Only $59!



Visit www.fastermacs.com for all your upgrade needs!

Our online configurator will show you what your computer can take and compare models from Sonnet Technology, Interex XLR8, PowerLogix, and NewerTech. Check out Video Cards Online too. Then, when you've found what's right for you, order online and $ave on shipping!

SAVE @OWC

FAST! EASY! SECURE!

www.fastermacs.com

newertechnology POWERLOGIX XLR8 SONNET SIMPLY FAST

ixMicro ixMICRO
Ultimate Rez 128
PCI 2D/3D Video
Video Card SPECIAL!
$67.50
New with 8mb VRam and 5 year Warranty





Call Us for all Your USB Needs
PRINTERS, JOYSTICKS, SCSI, SERIAL KEYBOARDS, MICE AND MORE!

Other World Computing
224 West Judd St., Woodstock, IL 60098
International: (815) 338-8685
Fax: (815) 338-4332

AD0800

* Free delivery only available for online orders of $100.00 or more shipped to destinations within the 48 continental United States.

Prices, Specifications, and Availability subject to change without notice. Items returned complete in original returned within 30 days may be subject to up to a 15% restocking fee. No return will be accepted without Return Merchandise Authorization Number.

School/University/Government/Corporate Purchase Orders Gladly Accepted (subject to credit approval)

Open Monday-Friday: 9am-8pm & Saturday: 10am-5pm CST E-Mail Us at: owc@macsales.com

other World Computing

Serving the Mac Universe Since 1988

VISA MasterCard AMERICAN EXPRESS DISCOVER C.O.D. **800-275-4576** FedEx Federal Express

Competitive Prices, Quality Products and NEVER a Surcharge for Credit Cards!



Our Website has 24hr. Online Ordering, Full Info, Daily Updated Prices & Specials



STORAGE UPGRADES

Visit www.macsales.com or call for SCSI hard drives 270mb to 2gbs

SCSI Hard Drives Internal & External

SAVE @OWC



IBM 18.2 Gig $259 Int. Ext.:$329

- SCSI
- 7200 rpm
- 7ms
- 5 Year Warranty

All OWC HardDrives Include

65mb of free software installed. External version features platinum case with dual SCSI ports, Push-button SCSI ID and 40 watt power and SCSI cable.

Charismac Anibus Drive Software Now available for $10 with Hard Drive purchase

	Int.	Ext.
IBM		
2.1gb UltraStar	$85	$149
9.1gb UltraStar 18ES UltraWide 7200rpm 7.0ms 2048k 5yr. warr.	$235	$299
18.2gb UltraStar 18ES UltraWide 7200rpm 7.0ms 2048k 5yr. warr.	$309	$399
QUANTUM		
8.4gb Fireball SCSI	$165	$235
18.2gb Atlas III 7200rpm 7.8ms 1024k 5 yr Warr	$259	$329
SEAGATE		
4.3gb Seagate Barracuda	$79	$149

True 50 Pin SCSI ST15150N **Limited Supply!**

3.5" IDE Internal Hard Drives

SAVE @OWC

60 Gig IDE Maxtor 60GB **$337.50** Int.

- 5400 RPM
- 9.5ms
- 3 Year Warranty
- ATA/66

IBM Deskstar 30gb 7200rpm	$249
IBM Deskstar GXP 34.2gb 7200rpm	$369
IBM Deskstar 75GXP 61.4gb 7200rpm	$489
Maxtor DiamondMax 10gb 7200rpm 2mb	$125
Maxtor DiamondMax 20.4gb 5400rpm 2mb	$139
Maxtor DiamondMax 30gb 5400rpm 2mb	$195
Maxtor DiamondMax 40gb 5400rpm 2mb	$259
Quantum Fireball 15gb ATA/66	$135
Quantum Fireball KX 20.5gb 7200rpm	$169
Quantum Fireball LA 26.0gb 5400rpm	$185
IDE-to-FireWire Case	$159

Use most any IDE Drive and convert to External FireWire for a low OWC price!

Turbomax PCI IDE Interface $145
This ATA/66 Card allows use of IDE Drives in any PCI PowerMac!



IDE PowerBook Hard Drives for iBook, PowerBook G3, Duo 2300/2400, PowerBook 5300/190/150

810Mb Apple ROM 12mm w/2 Year Warr.	$35
6.4GB Hitachi 9.5mm	$169
10.1GB Toshiba 4200rpm 12mm Slim 2 Year Warr.	$195
12.1GB IBM Travelstor 4200rpm Slim 2048k Cache	$227
25.0GB IBM Travelstor 4200rpm 17mm non-Slim with 2 yr Warr.	$565
32.0GB IBM Travelstor 4200rpm 17.5mm	$689
2.5 IDE PC Card Case External	$99

** some computers require slim model 2.5" Drives

Call or Visit www.MacSales.com for the latest in USB and FireWire Storage devices!

Also find the best prices on Zip, Jaz, Syjet, CD, CDR, CDRW, and DVD Drives and Media!



MEMORY UPGRADES



Memory listed by OWC is New with Lifetime Warranty and 30 Day Money Back Guarantee. All Memory products meet or exceed Apple Specifications.



iBook Memory

Memory for New Apple iBook!

32 MEGABYTE.....$36
64 MEGABYTE.....$67
128 MEGABYTE..$133.55

SDRAM Memory for G3/G4 and iMac 350&400mhz



SDRAM 2-2-2 CL2 PC100 Memory for all G4s, G3s, and iMac 350/400

32 MEG	$39
64 MEG	$65
128 MEG	$124
256 MEG	$252
512 MEG	$765

SAVE @OWC

Only the BEST Memory from OWC!

SO-DIMM Memory for G3 PowerBook Wallstreet/Lombard/Pismo & iMac 233,266,333





32 MEGABYTE	$36
64 MEGABYTE	$67
128 MEGABYTE	$133
256 MEGABYTE	$259
256 MEGABYTE Low Profile	$399

Call for PowerBook 190/500/1400/5300/3400/3500 and Duo Series Memory



SAVE @OWC

DIMM 168 PIN Memory

2k Refresh 70 or 60ns (specify)

	5V	EDO 5V
16 MEGABYTE	$27.50	$27.50
32 MEGABYTE	$79	$84
64 MEGABYTE	$139	$195
128 MEGABYTE	$175*	$175*

* Limited Time Only



SIMM 72 PIN Memory

2k Refresh 60ns

16 MEGABYTE	$35
32 MEGABYTE	$61*
64 MEGABYTE	$177

* Limited Time Only For Use in PowerMacs Only



SIMM 30 PIN Memory

Non-Parity for Older Macs

4 MEG 70 or 60 NanoSeconds	$19
16 MEG 70 or 60 NanoSeconds	$35

Mac Video RAM

256k PMac 7100/Quadra800/650	$15
512k PMac 8100/Quadra's/LC's	$19
1MEG PMac 72/73/75/76/85/8600 & Compat.	$25
4 MEG Motorola StarMax/PowerMac 4400	$29
4 MEG G3 Video SGRAM	$25

OWC is a Techworks Authorized Reseller. Call or Visit www.macsales.com for the best prices on Techworks Brand Memory.

TECHWORKS Power To Perform™

Other World Computing
224 West Judd St., Woodstock, IL 60098
International: (815) 338-8685
Fax: (815) 338-4332

AD0800

Call or Visit www.macsales.com for our full line.

Prices, Specifications, and Availability subject to change without notice. Items returned complete in original returned within 30 days may be subject to up to a 15% restocking fee. No return will be accepted without Return Merchandise Authorization Number.

MacMall

Everything and Anything for Your Mac and More!

Introducing the Mac Software & Accessories Buyers Guide!
Call For Yours Today! 1-888-425-MALL
Visit Our Online Catalog at software.macmall.com



MacMall EZ Payment Plan!

NEW! Payment terms up to 48 months!

Now you can have low fixed monthly payments on consumer purchases of $750 or more with the new MacMall EZ Payment Plan. It's fast and easy to apply for, and there are no application fees or prepayment fees. Call your Account Executive today, or apply online! You can complete your purchase in just minutes—and have your order tomorrow!

Financing available on approved credit arranged through MBNA America Bank, N.A. Payment does not include shipping charges and sales taxes if applicable. Estimated monthly payment is based on approximate 48-month term at an Annual Percentage Rate (APR) of 14.99%. Your APR may be higher. There are no transaction fees for MacMall purchases billed directly to your account. There is a transaction fee of 3% of the U.S. Dollar amount of each advance check you write ($5 min/$30 max), but there is no obligation to use advance checks.

HOT SOFTWARE TITLES

Illustrator 9

The industry standard vector graphics creation software for print and the Web just got better.

upgrade for only
$139.99 #58042





SoundJam MP

Converts music quickly and easily into high-quality MP3 format!

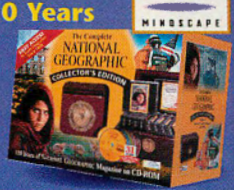
only
$24.99 #58276

With CPU purchase. (#48537 regular price w/o CPU purchase $48.99).

The Complete National Geographic: 110 Years

A mesmerizing read and the ultimate resource and reference tool!

only
$99.99 #57843





ViaVoice Millennium Edition 1.1

The first continuous speech recognition software for the Mac!

only $74.99 #53629

Control your Mac with your voice!



The Apple® iBook up to a blazing 366MHz

starting at $1,594!
Graphite Special Edition shown
or as low as $45/mo.
with the New MacMall EZ Payment Plan
● #56184 Blueberry ● #56183 Tangerine

iBook—The Portable iMac!

Outrageous performance.
- 300 or 366MHz PowerPC G3 processor
- 512K backside level 2 cache
- 66MHz System bus
- 64MB of SDRAM; supports up to 256MB
- 6GB IDE hard disk drive
- Built-in 24X CD-ROM drive

Connectivity.
- One 12-Mbps Universal Serial Bus (USB) port
- Built-in 10/100Base-T Ethernet
- Built-in 56K modem

Great graphics and video features.
- ATI RAGE Mobility graphics with 2X AGP
- 4MB SDRAM video memory
- 12.1" built-in TFT SVGA active-matrix display
- Only 6.6 pounds and 13.5" x 11.6" x 1.8"
- 800 x 600 resolution ● 16-bit stereo output

iBook Graphite 366MHz
only $1,794 #56176
or as low as $50/mo.
with the New MacMall EZ Payment Plan

Up to 500MHz PowerBook G3 Series!



Outrageous performance.
- 400 or 500MHz PowerPC G3
- 64 or 128MB RAM; exp. to 512MB RAM

The new features of the G3 PowerBooks include two FireWire ports and high speeds up to 500MHz!

- Hot-swappable expansion bay
- 2 USB ports, 2 FireWire ports, power adapter port
- Built-in 10/100 Base-T Ethernet
- One PC Card slot ● Mac OS 9
- 8MB SDRAM video memory
- ATI RAGE LT Pro video controller
- 10.4" x 12.7" x 1.7" @ 5.9 lbs.
- 14.1" (diagonal) display
- Includes 1 Lithium-ion battery (5 hrs); supports 2 batteries (10 hrs.)

Order	MHz	RAM	HD	Cache	Drive	Modem	Display	Price	or as low as
#56143	400	64MB	6GB	1MB	DVD-ROM	56K	14.1" Active Matrix	$2,494	$70/mo*
#56144	500	128MB	12GB	1MB	DVD-ROM	56K	14.1" Active Matrix	$3,494	$98/mo*

**with the New MacMall EZ Payment Plan*

HOT NEW PRODUCTS AND SPECIAL OFFERS!

Stylus® Color 900 Printer

- 12ppm black; 10ppm color
- 1440 x 720dpi resolution

Blowout! Call for details!

only $149.99 #74901

Price reflects $50 mail-in rebate. Factory refurbished. One year warranty. Ask for coupon #58189.



AGFA SnapScan 1212UB Blueberry Scanner

- 600 x 1200dpi max. resolution
- 36-bit color
- USB interface

only $69.99 #41512





Iomega® Zip® 100MB USB Drive

- Unlimited capacity
- USB interface
- Hot-swappable

only $99.99 #34314



Que! 4x4x24 FireWire CD-RW

An excellent archiving solution for recording studios.

only $299.99 #52850

Order Any Item in 4 Easy Steps
1. Go to www.macmall.com
2. Click on "Shopping Cart"
3. Enter part# in "Catalog Express"
4. Click on "Proceed to Checkout"

CATALOG EXPRESS

macmall.com 1-800-965-3282

400MHz iMac DV Models!



With an iMac DV, you have your own private movie theater and studio right on your desk!

All models include:
- 400MHz
- 64MB RAM
- 10GB hard drive
- 4X DVD-ROM drive
- 56K V.90 modem
- Built-in 10/100 Base-T ethernet

only $1,294

or as low as $36/mo.
with the New MacMall EZ Payment Plan

● #52501 Lime

● #52493 Blueberry ● #52498 Strawberry ● #52494 Tangerine ● #52496 Grape



350MHz iMac only $999

#52492 (Blueberry only)
Includes: 64MB RAM, 6GB Hard Drive, 24X CD-ROM Drive, 56K Modem
or as low as $28/mo.
with the New MacMall EZ Payment Plan

MacMall EXCLUSIVE!

Up to **128MB RAM*** **FREE!**

No Rebate Hassles!

Hurry! Offer expires 7/18/00.



If Product Price is Between	FREE RAM†
$1201-1800	64MB
$1801 +	128MB

†Memory is subject to a $30 professional installation fee. Sales tax and shipping do not qualify as part of product price total. Valid only on regular in stock items—special order and clearance items do not apply. Not valid with any other offer. All offers are subject to change. MacMall Exclusive Offer only applies to items advertised in this catalog. Sorry, iMacs do not qualify for this promotion.

400MHz iMac DV Special Edition

For those who want a little more, there's the iMac DV Special Edition. It includes all the great features of the iMac DV models and it comes in a unique graphite color. Plus, it has twice the standard RAM and a larger hard drive than the iMac DV models.

- 128MB of SDRAM; two SODIMM slots support up to 512MB
- Internal 13GB Ultra ATA hard disk drive



only $1,494 #52502 (Graphite) *or as low as* $40/mo.
with the New MacMall EZ Payment Plan



Authorized Reseller

Monitor sold separately.



Spectacular display performance with a simple, elegant design!
Apple 22" Cinema Display
$3,999.99 #59198

Power Mac G4's up to 500MHz!

All models include:
- PowerPC G4 Processor with Velocity Engine advanced vector
- 1MB backside level 2 cache
- 2 or 3 Built-in FireWire ports
- ATI RAGE 128 graphics card with 16MB of graphics memory processing technology
- 2 USB ports
- Mac OS 9

Order	MHz	RAM	HD	DVD	Modem	Zip Drive	Price	or as low as
#57560	400	64MB	10GB	DVD-ROM	56K	N/A	$1,594	$45/mo*
#57561	450	128MB	20GB	DVD-ROM	56K	Yes	$2,494	$70/mo*
#57562	500	256MB	27GB	DVD-ROM	N/A	Yes	$3,494	$98/mo*

*with the New MacMall EZ Payment Plan

Order Any Time! Open 24 Hours! Order Today by 10pm EST—Get it Tomorrow by 10:30am!

macmall.com 1-800-965-3282

AOL Keyword: MacMall *Mention your Priority Code: #ZMAD081*

MacMall

CALL THE MAC EXPERTS!

*Your one-stop source for everything Macintosh– over **30,000** items on sale at better than mail order prices!*
It's pretty simple: we know a lot about Mac stuff, and we care about our customers.

Software Specials

Panzer General Game	$3.00
US Atlas/Space Shuttle Bundle	$5.00
Norton Antivirus 5.0 CD	$19.00
Norton Utilities 4.0 CD	$19.00
Mac OS 8.1 OEM CD	$35.00
Toast 4.0 OEM for Mac	$39.00
Norton Antivirus 6.0 CD	$49.00
Word 98, Excel 98, PwrPoint	$199.00
Office 98 OEM CD	$249.00

Hardware Specials

• Apple Open Box Discounts •

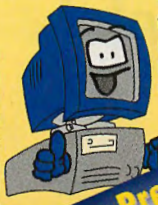
Ethernet Card for LC	$5.00
Photograde Print Kit for St.Wrtr	$9.00
Printer Cass. for LW 300&4/600	$19.00
Localtalk option for St.Wrtr.	$29.00
Envelope Cassette for LW 8500	$69.00
Sheet Feeder for LW 8500	$99.00
Sheet Feeder for LW 8500	$99.00
Apple FireWire Kit	$249.00



Final Cut Pro or iMovie questions? Call the digital camera experts!



New Canon ZR10 ..$New!
Canon Elura.....$1399
Canon XL1 Call!
Sony Mavica$469
Canon For all your DV needs!



We've made large purchases and taken in hundreds of trade-ins, and now we're clearing them out in one big blowout blast! Give one of our Mac experts a call and make your best deal!

Huge Pre-owned Mac Blowout!

Apple Specialist

- Huge Selection
- All with warranties
- Use your current peripherals
- Great price/performance ratios
- Apple, PowerComputing, Motorola, Umax

See our web site for complete descriptions and the latest configurations!

Fully configured pre-owned Macs®

6100 series, starting at	$149
6200 series, starting at	$178
7100 series, starting at	$199
7200 series, starting at	$236
8100 series, starting at	$242
7500 series, starting at	$383
6400 series, starting at	$425
7600 series, starting at	$447
8500 series, starting at	$449
9500 series, starting at	$510
7300 series, starting at	$657
8600 series, starting at	$893
9600 series, starting at	$1088
Umax C5-Series, starting at	$344
Umax C6-Series, starting at	$357
PowerBase Towers, starting at	$348
PowerCenter Desktops, starting at	$359
PowerCtr Pro Towers, starting at	$449
PowerTower Pros, starting at	$456
StarMax 4000's, starting at	$370
Umax S900's, starting at	$574
iMacs™, starting at	$729
iMac™400 DV's, starting at	$1049
iBooks™, starting at	$1149
Beige G3 Desktops, starting at	$1188
Blue & White G3's, starting at	$1170
G4 Graphite Towers, starting at	$1349
PowerBook® 5300's, starting at	$499
PowerBook® 1400's, starting at	$858
PowerBook® 3400's, starting at	$957
PowerBook® G3's, starting at	$1649

Factory Refurbished Macs®

iMacs® from 233 to 333	$Call!
iMac™ G3/350 64/6/24x CD	$849
iMac™ G3/400 64/10/DVD	$1139
Graphite iMac™ 128/13/DVD	$1349
iBook™ 300 32/3/CD	$1199
Blue/White 300 64/6/CD	$1230
Blue/White 350 64/10/CD	$1284
Blue/White 400 64/6/DVD	$1321
Graphite G4/400 64/10/CD	$1399
Graphite G4/350 64/10/DVD	$1399
Blue/White 400 128/9 UW/CD	$1471
Blue/White 400 128/12/CD/Zip	$1531
Blue/White 450 128/9 U2/CD	$1651
PowerBook® G3/250 32/4/CD	$1741
PowerBook® G3/233 32/2/CD	$1778
PowerBook® G3/300 64/8/DVD	$2188

Why PowerMax is Special

We understand there are lots of places to buy Mac® stuff, but we offer some things that we think are pretty unique:

- **Choices –** 800 number, internet site, email, fax, even in person at one of our Northwest locations. And we don't think *anyone* carries the variety of Macs® that we do!
- **Things Like Not Using Voice Mail –** How many times have you tried to get a hold of a reseller or manufacturer, whether for sales or tech support, and found your contact buried behind an automated voice mail system? We don't use voice mail for *anyone* in the company – and never plan to.
- **Selection and Price –** Over 30,000 separate software and hardware items at nationally competitive prices.
- **Personalities –** Only pleasant, intelligent people work for PowerMax. Sometimes we may have a little too much fun, but we're great people to get to know if you're living in a Mac world.

Hard Drives, Printers, Displays & More

Internal 56k modem for B&W G3	$29
Logitech Cordless Mouse	$29
Gravis Firebird ADB joystick	$39
iBook/ G3 AC Power Adapter	$49
Altec Lansing 3 pc. Sound System	$59
Internal 800 Mb Apple Drive	$79
Newer uDrive Ice Blue USB Floppy	$85
Used 17" Apple Trinitron Display	$189
Used 20" Apple Trinitron Display	$349
QPS DVD RAM Firewire Drive	$599
Special on Airport Bases & Cards!	$Call
Best prices anywhere on Apple batteries!	

Free! 20 CDR Disks with every CDR drive purchased – see our incredible variety of external drives at www.powermax.com!

Canon Printer Bundle
We make it simple for our customers, buy any G4 and receive a Canon color USB printer FREE!*





$1688

Xerox NC60 Color Laser
Printer Sale – Possibly the best price you'll ever see on a color laser printer! *After mfgrs rebate

PowerMax 17" 720T Trinitron® Display w/5 year warranty $329
.25mm dp with max resolution of 1600x1280— the highest quality Trinitron® made!

TradeUp with PowerMax!



We'll take your Mac OS computer in trade toward the purchase of new product. Call one of our expert Mac consultants for full details!

POWER MAX™
Knowledge is Power

800-441-6977

Local: (503) 624-1827 • Fax (503) 624-1635
email: sales@powermax.com

Prices subject to change without notice. Prices reflect cash discount. Credit card orders strictly verified against fraudulent use. With use of credit card as payment customer acknowledges that some products are subject to final sale. Many prices are limited to stock on hand. All brand or product names are registered trademarks of their respective holders.

WWW.POWERMAX.COM

- *Weekly specials, close-outs and deals*
- *Order on-line or call one of our expert consultants*
- *Experts at locating hard to find items or parts.*
- *Easy-access tech support updates and downloads*

Authorized Reseller

- Personal Financing • Fast P.O. Approvals
- Business Leasing

DISCOVER NOVUS VISA MasterCard AMERICAN EXPRESS

Graphite G4s | DV iMacs™ | iBooks™ | PowerBooks® | Blue & White G3's | Beige G3's | Software

APPLEMUGSTORE.COM

YET ANOTHER GOOD REASON TO JOIN A MAC USER'S GROUP













MUG STORE

Macintosh User Group members enjoy access to a very special Apple-sponsored web site featuring super deals on the latest Apple products as well as factory refurbished and discontinued Macs, and much more! Not a member? Find out how you can get these great deals by calling PowerMax at 800-689-8191.

Apple Specialist

www.applemugstore.com

Authorized Reseller

The MUG Store. A cooperative venture between Apple and PowerMax to bring MUG members exclusive deals on the latest Mac® products and special offers on discontinued and *factory refurbished computers.

PowerMax is a division of Computer Stores NW, Corvallis, OR.

Shreve Systems

For all this and more check out our website!

http://www.shrevesystems.com



WE BUY MACS & MAC STUFF (318) 424-9791

WE STOCK MAC PARTS!

1•800•227•3971

FAX (318) 424.9771 • Technical Support (318) 424.7987
Customer Service (318) 424.9791 • Purchasing/Information (318) 424.9791
1200 Marshall Street • Shreveport, Louisiana 71101



HP Deskjet 890
ONLY $249

PowerBook 5300cs

- Supports ext. video
- 24MB RAM
- 750 Hard Drive
- 100-MHz 603e
- Dual-scan color
- Refurbished



ONLY $499

ADD 56K PCM/CIA MODEM FOR ONLY $100 MORE!

MacintoshLC580

Internet Ready! **$249**

- 33-MHz MC68LC040
- 8MB of RAM
- 800MB Hard Drive
- 28.8 Motorola Modem



$299 with internal 4XCD

Color LaserWriter 12/600PS

- 600-dpi
- 12 ppm
- Color Photograde
- LocalTalk, Ethernet
- Mac, DOS, Unix or Windows
- Toner included



Refurbished ... $1299

PowerMac 6100 Bundle

*Includes 13" Monitor
*24 MB Ram
*250 MB Hard Drive
*2X CD

ONLY $249

1•800•227•3971

Tangerine iBooks ON SALE!



ONLY $1,199!

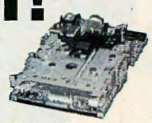
- 300-MHz PowerPC
- 32MB RAM
- 3 GB Hard Drive
- 56K Modem
- CD
- * 12.1 Active Matrix Display

Factory Refurbished

FLOPPY DRIVE BLOWOUT!



NEW
PART # 661-0474



1.44 SuperDrives

STARTING AT $29!

NO EXCHANGE REQUIRED!

We stock parts for new and vintage Macs!

MacAlly Extended Keyboard *NEW!* **$19**





PowerComputing 17" Monitor ONLY $169!

Factory Refurbished



NEW! Genuine Apple ADB Mouse II **$39**



Voxon 14" and 15" Monitors
NEW! AS LOW AS $99!



ClarisWorks 3.0 CROSS-PLATFORM- FOR MAC OR PC

ONLY $19!

24X Internal Replacement CD Drives for IMac
ONLY $149

Apple 24X Internal Replacement CD Rom for Desktops
ONLY $199

Internal 6X CD Rom for PowerBook 3400
ONLY $129

We also specialize in digital audio recording! Call for the best prices on Alesis, Akai, Tascam, Digidesign and Mark of the Unicorn!



AKAI DPS 12 v2

*Use MESA software to edit on your computer!
*Burn your own CD's!



STARTING AT $699

Check out our website at www.shreveaudio.com



ClarisWorks 4 Internet Edition
ONLY $39!
NEW!

System Bundles SALE!

7100/60	5200	4400	5400/120	8500/120	7250/120	7200/75
24/350/CD/13" Monitor	24/350/CD/15" Monitor	32/2GB/CD/	16/1.6GB/CD	16/1GB/4X	32/2GB/8XCD	0/0/0
$449 refurbished	$499 refurbished	$499 refurbished	$799 refurbished	$749 refurbished	$599 refurbished	$279 refurbished

PowerMac CPU SALE!

PRINTERS

Apple 11x17 Color Inkjet Printer NEW, #M9500	$249.
HP Deskjet 890 CM, NEW	$249
Apple StyleWriter 1200, refurbished	$149.
Apple Stylewriter 1500, factory refurbished	$129.
Apple StyleWriter 2400, refurbished	$99.
LaserWriter IInt, refurbished w/ Toner	$199.
LaserWriter IIf w/5MB RAM, refurbished	$549.
LaserWriter IIg w/5MB RAM, refurbished	$649.
Texas Instruments Micro Laser Pro E NEW	$499.

Laser toner cartridges sold separately

IMAGING PRODUCTS

Apple QuickTake 150 refurbished	$149.
Apple QuickTake 100 refurbished	$99.

MACINTOSH LOGIC BOARDS

G3 logic board, No Processor, No ROM	$449.
7200/90 logic board, refurbished	$179.
LC logic board, refurbished	$49.
LC II logic board, refurbished	$149.
Mac LCIII logic board, refurbished, exchange	$149.
Performa 630 ,No Processor, refurbished	$79.
8500 logic board, exchange	$499.
9500 logic board, exchange	$649
Quadra 950 logic board, refurbished	$179

APPLE PC COMPATIBILITY CARDS

Pentium 100-MHz, refurbished	$149.
Pentium 166-MHz, 12" PCI card, refurbished	$299.
586 100-MHz, 7" PCI card, refurbished	$99.
486 66-Mhz for 6100 series, NEW	$29.

MONITORS

Apple 14" A/V NEW	$149.
Apple 14" Multiscan, refurbished	$119.
Apple 15" Multiscan, refurbished	$129
Apple 15" AV, factory refurbished	$199.
Apple MultiScan 17", refurbished	$179.
Apple 20" Multiscan, refurbished	$599.
Radius IntelliColor/20e, factory refurbished	$999.
Voxon 14" Multiscan NEW	$99.
Voxon 15" Multiscan NEW	$129.
Power Computing 15" refurbished	$129.
Power Computing 17" refurbished	$149.

NUBUS ADAPTERS

Quadra 660AV NuBus Adapter	$69.
Quadra 610 Nubus Adapter	$69.
IIsi Nubus adapter with math co-processor	$49.

VIDEO CARDS

ATI XClaimVR RAGE II 2MB with FREE TV Option	$149.
E-Machines DoubleColor SX Nubus Card NEW	$29.
RasterOps 24MX NEW, 24-bit Nubus	$149.
*PowerMac HPV Card (1MB)	$79.
*PowerMac A/V Card (2MB)	$199.

1•800•227•3971

*Products are refurbished unless indicated as "new". Prices reflect a 2% cash discount and are subject to change without notice. Returns are subject to a 15% restocking fee. Not responsible for typographical errors. All trade-ins MUST BE in working condition. Refurbished systems may include like-new components and may also include cosmetic blemishes which do not functionally impair performance of the hardware.

www.shrevesystems.com



Hot Deals on Drives & Accessories!

1-800-473-0962

www.dirtcheapdrives.com

WE'RE THE NUMBER 1 DRIVE STORE ON THE WEB!

Leading the hard drive industry for more than a decade with unlimited lifetime technical support!

Winner of TWO 1999 Computer Shopper's Choice Awards

800# Hours: Monday - Friday: 8am - 8pm • Saturday: 9am - 3pm, CST • Fax: (281) 534-6452

SONY

Tape Drive

Ultra Wide SCSI/DDS-4

$949 20-40GB

Int. (SDT11000AI) **$1119 Ext.** (SDT11000XM)

TOSHIBA

DVD RAM Drive

1x16x2 $409 Bare ***SCSI-2***

Reads DVD-ROM, DVD-R, CD-ROM, DVD & CD Video, CD Audio, CD-R & CD-RW disks. (SDW1111)

Seagate

NEW Hard Drive w/16MB of Cache!

73.4GB *Ultra 160 SCSI*

$1529 160MB/sec data transfer rate & 10,000rpm

Int. (ST150176LWV) *This is our largest, fastest, baddest drive!*

Quantum

IDE Hard Drives w/512k buffers

5.1 - 30GB *Ultra ATA/66*

5.1GB Int. (QML05100LA) **$83**

10.2GB Int. (QML10200LA) **$95**

15.0GB Int. (QML15000LA) **$115**

20.4GB Int. (QML20400LA) **$132**

30.0GB Int. (QML30000LA) **$195**

Panasonic

DVD RAM Drive

1x20x2 $589 ***SCSI-2*** Kit

DVD RAM CD ROM, DVD ROM

Reads DVD-ROM, DVD-R & CD-RW. Incl. Soft.& Disks (LFD103U)

YAMAHA

CD-RW Drive

8x4x24 $249 ***SCSI-2***

W/Mastering Software & 1 disk • 4MB buffer, tray load

Int. (YCRW8424WOW) **$289 Ext.** (YCRW8424MX)

HARD DRIVES

Quantum

Capacity	Cache	RPM	Product No.	Price
ULTRA 160 SCSI (160 MB per second data transfer rate)				
9.1GB	4MB	7,200	XC309100LW	$219
9.1GB	2MB	10,000	TN309100LW	$329
18.4GB	4MB	7,200	XC318400LW	$345
18.2GB	2MB	10,000	TN318200LW	$509
36.7GB	4MB	7,200	XC336700LW	$675
36.4GB	2MB	10,000	TN336400LW	$899

IBM

Ask about IBM's Ultra 160/m deals!

Capacity	Cache	RPM	Product No.	Price
ULTRA SCSI				
9.1GB	2MB	7,200	IBM309170N	$219
18.2GB	2MB	7,200	IBM318350N	$299
ULTRA WIDE SCSI				
9.1GB	2MB	7,200	IBM309170W	$219
18.2GB	2MB	7,200	IBM318350W	$299
ULTRA-2 SCSI				
9.1GB	2MB	7,200	IBM309170U2	$219
18.2GB	2MB	7,200	IBM318350U2	$299

Seagate

We've got a complete line of accessories for every drive. Cables, controllers & more! Call.

Capacity	Cache	RPM	Product No.	Price
ULTRA SCSI				
9.2GB	512K	7,200	ST39216N	$229
18.4GB	512K	7,200	ST318416N	$339
ULTRA WIDE SCSI				
9.2GB	2MB	7,200	ST39216W	$229
18.4GB	2MB	7,200	ST318416W	$339
ULTRA-2 SCSI				
50.1GB	1MB	7,200	ST150176LW	**$869**
ULTRA 160 SCSI - *DATA TRANSFER UP TO 160MB PER SECOND!*				
9.2GB	2MB	7,200	ST39236LW	$229
9.2GB	4MB	7,200	ST39236LWV	$225
18.4GB	2MB	7,200	ST318436LW	$339
18.4GB	4MB	10,000	ST318404LW	$495
36.7GB	4MB	10,000	ST336704LW	$895
73.4GB	4MB	10,000	ST173404LW	$1469

USB STUFF

4x4x32 CD Rewritable for PC or Mac	USB4X4X32	$279
100MB/250MB Zip Drive	ZIP100USB/ZIP250USB	$129/$179
USB to SCSI Adapter	USBSCSI	$69
SuperDisk Drive, 120MB & Floppy (For Imacs & G3s)	USBLS120	$149
Floppy Drive	USBFLOPPY	$85
8GB Hard Drive	USB8GB	$159
17GB Hard Drive	USB17GB	$189
20GB Hard Drive	USB20GB	$199
30GB Hard Drive	USB28GB	$275
Firewire (1394) USB/PCI Controller – *Call!*	70HTL00060	$149

CD MEDIA

DIRT CHEAPEST PRICES ON CD MEDIA!

CD Recordable & Rewritable Media

CDR-74 Recordable	Speed	Item Number	Price
Budget 5 pack	8x	CDR74B-5	$6
Budget 20 pack	8x	CDR74B-20	$22
Budget 50 pack	8x	CDR74B-50	$50
Budget 100 pack	8x	CDR74B-100	$89
CDR-74W Rewritable			
Budget 5 pack	4x	CDR74WB-5	$8
Budget 20 pack	4x	CDR74WB-20	$22
Budget 50 pack	4x	CDR74WB-50	$56
Budget 100 pack	4x	CDR74WB-100	$104
CDR-74 Printable			
Budget 5 pack	8x	CDR74PB-5	$8
Budget 20 pack	8x	CDR74PB-20	$22
Budget 50 pack	8x	CDR74PB-50	$54
Budget 100 pack	8x	CDR74PB-100	$95
CDR-80 Hot 80 minutes media for more storage space!			
Budget 5 pack	8x	CDR80-5	$9
Budget 20 pack	8x	CDR80-20	$25
Budget 50 pack	8x	CDR80-50	$57
Budget 100 pack	8x	CDR80-100	$104

Call about even lower pricing discounts or high volume spindle bundles. When we say nobody beats our CD media pricing, we mean NOBODY.

Call for our latest pricing on DVD drives and accessories!

WaveLink PC to TV Transmitter
View DVD movie titles on TV without the use of wires. Get crisp color & stereo audio up to 300 feet away. (PCTOTV) $119 or $109 w/drive purchase

Acer 10x DVD Rom Drive
Watch DVD movies through your PC! Reads CD Discs, DVD-Rom Video, DVD-R & DVD-RW. Bundled Software. Plug & play. (DVP1040A) $129

8x DVD Drive Kit by Creative™ (CLDVD8KIT) $229

DVD Utility Software (PC or Mac) (DCDSFTPC-NT)/(DVDSFTMAC) $59

PIONEER DVD RECORDER

Make Your Own Movies!
- Incremental write W/4 MB buffer
- DVD-R write 1x, DVD-R read 2x
- Supports 3.95GB & 4.7GB disks

Includes DVD mastering software and 3 blank DVD disks. SCSI drive Kit (DVRS201) **$3,999**

DVD RAM Media
Record up to 5.2GB (DVDRAMDISK) 1-4/5-9/10+ $37/$35/$33

CD REWRITABLES

Sony 10x4x32 SCSI Packet write, 4MB buffer, writes to CDR (write once) at 10x, CDRW (rewritable) at 4x, and reads at 32x
Internal drive (CRX145S)/External drive (CRX145SX) $335/$395

Hewlett Packard 10x4x32 IDE Packet write, 4MB buffer, tray load, writes to CDR (writes once) 8x, CDRW (rewritable) 4x, reads 32x
Internal includes software (C4492A) $285

Plextor 12x4x32 SCSI Packet write, 4MB buffer, tray load
Internal drive (PXW12432B) $299
External drive (PXW12432BX) $359

MicroSolutions 4x4x20 Int. IDE - parallel port (BACPAC4x20) $285

CD DUPLICATOR

4x duplication speed. Built in CD reader. LCD panel w/controls. Built in hard drive. Duplicate almost any type of disk. Connects to Mac or PC. Create custom audio CD titles. Direct write from CD-ROM to CD-R. **$929** (CDEZDUPE)

PROFESSIONAL CD PRINTER

Better than ink markers or stick-on labels!
1200x1200dpi resolution!
Windows 3.1, 95, NT, and MacOS compatible
Printer w/50 printable disks (CDPRINT53) **$1069**
Black toner $59 (CDTONER3B) Color toner $69 (CDTONER3)

800-673-MACS

916-652-1880 fax 916-652-1881 800-673-6227

www.poweron.com

email: sales@poweron.com Check Out Our Complete Inventory Online

iMAC 333Mhz



$759

Refurbished

- 32 MB RAM
- 6.0 GB Hard
- 24x CDROM

HP LaserJet 2100M

1200 x 1200 dpi
10 ppm output



Serial Port
Parallel Port
MacOS Ready

$549

Refurbished
1 year warranty

SuperMac S900

Build it YOUR way!



$399 New/OEM

Base Configuration 16/0/0
6 PCI SLOTS, Serial & SCSI ports

SuperMac C600

16/1GB/CD



$399 G3 Upgradable

3 PCI SLOTS, Serial & SCSI ports

604e 200 16/2GB/CD/Vid , E-Net	599.99
G3 250 32/2GB/CD/Vid , E-Net	799.99
G3 250 32/9GB/CD/16MB Vid , E-Net	999.99
603e 240 16/1GB/CD Key & Mse	449.99
603e 240 16/2GB/CD Key & Mse	499.99
603e 300 16/2GB/CD Key & Mse	549.99

Apple Mouse II	32.99	PCI to USB 2 Ports	69.99
ADB Mouse OEM	19.99	USB iMouse (N)	29.99
ADB Mouse 2 button	24.99	USB iMouse (N)	29.99
ADB Motorola Key	29.99	USB iBall Trackball	39.99
ADB UMAX Key	29.99	USB to Serial (N)	79.99
ADB Std Keybrd I	29.99	USB iKey Keyboard	69.99
ADB Std Keybrd II	29.99	USB iHub 4 port	49.99
ADB Gamepad (N)	39.99	USB to ADB	49.99
Apple Design Keyboard (U)	29.99		
Apple Extended II Keyboard (U)	29.99		
Apple Original USB Mice	29.99		
Apple Original USB Keyboards	69.99		

ZIP/HD/CDROM Install Kits	IN STOCK
Apple Floppy Drives-(N)/(P)	99/59
240 MB SCSI Hard Drive-Internal (P)	39.99
500 MB SCSI Hard Drive-Internal (P)	49.99
1 GB SCSI Hard Drive-Internal (P)	79.99
2 GB SCSI Hard Drive-Internal (P)	99.99
6 GB EIDE Hard Drive-Internal (N)	149.99
27 GB EIDE Hard Drive-Internal (N)	199.99
HD External Cases-SCSI cbl incl (N)	49.99
USB to EIDE External Cases (N)	59.99
Firewire to EIDE External Cases (N)	59.99
CD External Cases-SCSI cbl incl (N)	39.99
Iomega Zip Drive Int. SCSI (P)	69.99

PowerMac 6100 8/230 (U)

Power PC 601
G3 Upgradable
Includes Ethernet

$99.99 *CD Optional

PowerMac 7100 8/500 (U)

Power PC 601
G3 Upgradable
Includes Ethernet

$149 *CD Optional

Apple 2x 300i+ CDROM (P)

Trayloading
Internal Bootable
Uses Apple Drivers

$29.99

Motorola 28.8 Modem (N)

OEM Packed
Mac Ready
Includes Cables

$29.99 New

External 56K v.90 Modem (N)

OEM Packed
Mac Ready
Includes Cables

$69.99 New

UMAX PARTS

MotherBoards, Power Supplies and More!

MacOS 8.1 $29.99
MacOS 8.5 $59.99

OEM / FULL INSTALL

Apple Original CDROM

2X 300i+.....$29.99
8X 1200i....$59.99
12X 1800i..$79.99
24X 3600i..$109.99

CDROM Drives are MacOS Bootable and use Apple Original Driver Software

ixd GAME ROCKET



$119 16MB

- VooDoo Banshee
- Retail Packed
- 250 Mhz RAMDAC
- 128-bit 2D engine

CLOSEOUT

Precision
3 Button
ADB Trackball

$19.99 NEW

32x ATAPI

Apple Original CDROM

$99.99

ix3d DUAL MONITOR VIDEO CARD

supports TWO Additional Monitors



250Mhz RAMDAC
1920x1200 max
128 bit 2D/3D
Twin Turbo
Dual Ported EDO VRAM

$149

EPSON Stylus Color 740



REFURB $59*
NEW $129*
FREE EPSON Inkjet Paper
1 YEAR EPSON Warranty

24x Macintosh Ready! BOOTABLE EXTERNAL CD-ROM

Includes Driver Software

$109.99

Apple 17" Multiscan

Refurb



$199

Trinitron Tube
Digital Controls

Laser Toner & Inkjet Cartridges

COMPLETE ONLINE REFERENCE
http://www.poweron.com
Apple®, Canon®, Epson® and Hewlett-Packard®

Apple Original HARD DRIVES

Quantum or IBM

2GB $99.99

External Drives w/cables add $50

Apple 20" Multiscan

Refurb



$399

Trinitron Tube
Digital Controls

All products are sold with a 90 Day PowerON warranty

*All Prices include 3% cash discount
**Prices subject to change without notice
***All items are Used or Refurbished unless otherwise indicated. All Sales Final.

Gov't & School PO's Accepted

PowerON Computer Services

Mon-Fri 7-6 PST, Sat 10-5 PST
4323 Anthony Ct. #1 Rocklin, CA. 95677
E-Mail: Sales@poweron.com

All brand or product names are registered trademarks of their respective holders and are respectfully acknowledged.

NEW!

GrooveMaker 2.0

Import&Remix MP3!!!

Cybermix Software & Sounds



Millions of grooves at your control. And you're the DJ.

- Play, Mix, Randomize, Load, Import and Match loops on the fly without ever stopping the music!!
- Use it in the studio or play it live!
- Amazing real-time response
- Import and resync virtually any loop, including MP3s!
- Integrated virtual synth arpeggiator
- Integrated groove sequencer for easy visual composition!!!
- Export your mixes with multiple audio formats
- Put your music directly on the web or on CD



GrooveMaker 2.0

2-CD ROM $79.95

Comes with 2 CDs of House, Tecno, Trance, Jungle, Drum'n'Bass, for more than 750 loops



GrooveMaker 2.0 DJ-BOX

4-CD ROM $129.95

Comes with 4 CDs of House, Tecno, Trance, Jungle, Drum'n'Bass, Ambient, Dub for more than 1250 loops. The ultimate DJ tool!

CALL 800-747-4546
WWW.GROOVEMAKER.COM

Huge Range of Pro-Sounds Available!!!

HouseParty - House $49.95



Drumbasstic - D'n'B $49.95



Teknostorm - Techno $49.95



Stun - Hardcore/Techno $49.95



MEMORY

BEST MEMORY PRICES & WARRANTY ANYWHERE. NEVER UNDERSOLD!

Lifetime Memory Replacement Guarantee

SECURE ONLINE SHOPPING @ www.datamem.com

CALL TOLL FREE: 800-662-7466

EPSON UMAX LACIE iomega VIKING POWERLOGIX SONNET SIMPLY FAST

MEMORY UPGRADE SPECIALISTS SINCE 1987

DMS offers all of the hardware you will need to network your office. We have hubs,connectors,CAT5 cables, Ethernet cards, adapters and complete computer systems for client / server applications priced from $799.

Accelerators For
- PowerMacs
- StarMAX
- Power Computing
- UMAX

DMS DATA MEMORY SYSTEMS

Open from 8:30 a.m. 'til 8 p.m. M - F

Fax P.O.s to 603-898-6585 or send thru our web site: www.datamem.com

DMS ACCEPTS GOVERNMENT,EDUCATIONAL & CORPORATE PURCHASE ORDERS WITH PRIOR APPROVAL

macally imediakey®

Macally USB Multimedia Keyboard



macally iHubJr.





macally iMouseJr.

CardBus FireWire



macally™

Macally is proud to bring you the latest USB and FireWire peripherals for Mac users. Our full line of products are specifically designed to improve your productivity. Please visit our website to see what Macally has to offer. We work hard to provide you with the best peripherals for your Mac.

Call us for dealers near you 1-800-644-1132 or visit us at: www.macally.com

All trademark or registered trademarks are the property of their respective owners

UniMouse

contour DESIGN

3 Programmable buttons and high definition encoder mechanism make the UniMouse have super smooth cursor control and superior functionality. Ergonomic shape and soft rubber side grips provide maximum comfort and control. Featuring USB Overdrive software for programmability and Application Sensitive settings.



$19.95 Value FREE Frost UniTray!

Ultra-glide mousepad with 100% gel wrist suport.

Available from Authorized dealers. Call for Details. 1-800-462-6678 or visit www.contourdesign.com

Offer good for a limited time only. Shipping charges may apply. Contact Contour Design, Inc. for more details. All trademarks and registered trademarks are the property of their respective owners.

IF YOU'RE CHEWING UP HOURS SEARCHING FOR STOCK IMAGES ON THE WEB

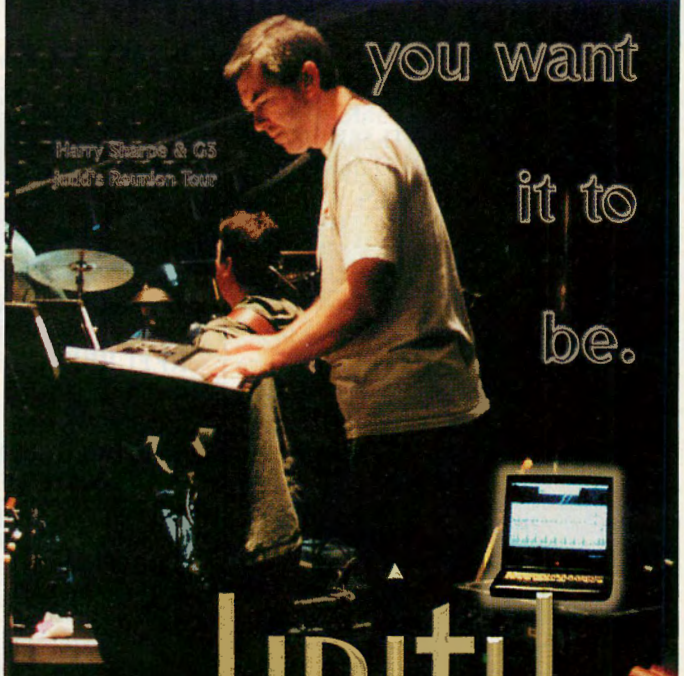
Grab This

RANDOM EYE *image grabber*

Go to the MacAddict disk. Check out *image grabber* (free download) and wonder how you ever lived without it.

www.randomeye.com

Any instrument you want it to be.



www.bitheadz.com

Unity DS-1

The most brilliant musical instrument in the world now comes shaped like a PowerBook. It's all that pro musician Harry Sharpe of Wynonna Judd has used for his sound in their last 150 concerts.

Unity DS-1 reproduces electronic and acoustic instruments in stunning 24 bit clarity and detail, with any sequencer, on any iMac, G3 or G4, and without any additional hardware.

Connect a MIDI keyboard to your Mac for realtime jamming out on the patio, or on your next world tour.

- G4 optimized for 128 stereo voices
- Imports most major sample formats
- 10 MB/sec. sample loading
- 24 bit, 96 KHz sound quality
- To order, call 888-870-0070

BitHeadz

Mac Addict Rated

MacMart
Systems & Peripherals

If it's New & We don't have it.. Chances are Nobody does

GUARANTEED LOW PRICES
On Over 10,000 New Mac Products
SPECIALS - PRODUCT INFO - UPDATES AT..
macmart.com

NEW POWERBOOKS
iBook 300 12.1" 64 - 6 CD-56K	$1499
iBook 366 12.1" 64 - 6 CD-56K	$1725
G3/400 14.1" 64-6GB-DVD-56K	$2399
G3/500 14.1" 128-12GB-DVD-56K	$3349

PRINTERS
HP USB DeskJet 840C 1100XI	$159 $456
HP Laser 10 PPM - 2100M 2100TN	$759 $965
Epson Stylus 740 760	$149 $149
Epson Stylus 750 850NE	$235 $439
EPSON USB STYLUS SCAN 2000 - COPIER - SCANNER - & PRINTER	$199
Epson Stylus 1270 3000	$479 $479
Tektronix Color Laser 740+ 850N	$1995 $2475

SCANNERS & CAMERAS
Agfa 1212U EPhoto 780C	$64.... $199
Epson 636U 1200U W/ Trans Adap	$179 $299
Epson 800 Camera. 836XL	$829 $2149
Kodak DC240 DC280	$459 $549
Microtek 6400XL 12"x17 Flatbed	$765
Microtek X6EL 6400XL	$139 $779
Nikon CoolPix 800...950	$547...$799
Umax 4000U Powerlook III	$279 $599

STORAGE
Iomega Zip Drive 100MB ... 250 MB	$85 ... $159
FireWire Ext. 24x4x4 CDR-W	$285
Seagate 30.6 GIG Barracuda ATA	$214

Epson 740 Prices after $50 Rebate

NEW POWERMACS
G4/400 64 MEG -10GB-DVD-56K	$1529
G4/450 128-20GB-DVD-ZIP-56K	$2389
G4/500 256 MEG-27GB-DVD--ZIP	$3299

SYSTEM SPECIALS
G4/400 128-10GB-DVD-56K Modem Zip Drive, SCSI Card	$1679
G4/400 192 -10GB-DVD-56K Mdm Zip Drive, SCSI Card & 17" .26 DPI Display	$2025

VISIT OUR WEB FOR MORE SPECIALS

REFURBISHEDPOWERMACS
G3/300 B/W 64 MEG -6GB-CD	$995
G3/450 B/W 128 MEG -9GB UW-CD	$1295
G4/350 64 MEG-10GB-CD	$1199

SPECIALS
MICROSOFT OFFICE 98 (*Full Version*)	$349
USB HUB 4 PORT 7 PORT HUB	$29 $39
PCI USB CARD (Add USB to Your Older Mac)	$35
4 PORT PCI SERIAL CARD	$159
SEAGATE 18.2 GIG BARRICUDA SCSI	$345
ATI XCLAIM VR 128 NTSC 16MB TV	$185

Proud Member of the Better Business Bureau
www.macmart.com - sales@macmart.com
15500 Erwin St • Suite 4022 • Van Nuys, Ca, 91411

VIDEO DISPLAYS
Apple Studio Display 17" 15"	$479 $1229
Hitachi 17" 19" .22 DPI 1600x1200	$329 $499
KDS 17"1280x1024 .28 DPI W/ Speakers	$249
Sony 17" 210GS 19" 420GS	$329 $565
Sony 19" G400..... 21" 520GS	$659..... $929
AOC 17" .26 DPI 1600x1200 w/ Speakers	$259
Viewsonic 17" .26 DPI w/ USB	$289 $299
Viewsonic 19" .26 DPI 1600x1200	$389
Viewsonic .19" 1600x1280 .26dp Black Case	$419

LIFETIME MEMORY WARRANTY
PC100 64 MB ... 128 MB	$59... $110
PC100 256 MB ... 512 MB	$225... $575
SO-DIMMS 64 MB 128 MB	$63 ... $110
SO-DIMMS 128 MB LP ... 256 MB	$115 ... $239
72 PIN SIMMS 32MB 64MB	$69 ... $99
168 PIN DIMMS 32MB 64MB	$69 ... $99
3.3 VOLT DIMMS 32MB ... 64 MB	$55 ... $95
COMPACT FLASH 16 MB ... 32 MB	$49 ... $65
COMPACT FLASH 64 MB ... 128 MB	$145 ... $229
SMART MEDIA 16 MB ... 32 MB	$65 ... $139

Order Toll Free in the USA
1-800-600-2708
Fax 818-904-1410
International & Dealer Sales 818-904-1400

Brand Names are Trademarked with their respective holders • Prices listed are COD • Price & Availability subject to change • Restocking fee may apply on some items • C.O.D. , Credit Cards, Wire Transfer & Pre-Payment Accepted 30300

MEMORY and MORE!

Lifetime Warranty on RAM!

BEST PRICES!

Authorized Dealer
Apple Specialist
Authorized Service Provider

OnLine Discounted Pricing available only at www.macsolutions.com

iBook™ and G4 Memory Available!

NEW MACS* & DRIVE SPECIALS!
PowerBook G3 333 64/4gb/24x/56k	$ 1,999*
iMac™ 350 G3 64/6gb/24x/56k	999*
iBook™ 300 12.1 64/6gb/24x/56k Blue/Tang	1,599*
G4 400 64/10gb/DVD/56k	1,599*

*FREE 64mb RAM w/ $29 install fee
*New Macs available for Walk-In sales only.

Seagate IDE - 20.4/30.6gb	154/220
Seagate 18.4gb Barracuda 68pin UW SCSI	380
Seagate U160 SCSI Cheetah 18.4/36.7gb	530/940
IBM 9.1gb UltraStar SCSI	199
Toshiba IDE 12gb	265

G4/Yosemite/G3/iMac™
64 mb	$ 59
128 mb	117
256 mb	232
512 mb	459

iMac™/iBook™/PBG3 98/99
64 mb	$ 59
128 mb	117
256 mb	235
512 mb	459

168 Pin DIMMs
16 mb	$ 19
32 mb	49
64 mb	90
128 mb	180

SIMMs 72 & 30 pin
4 mb	30 pin	$ 7
16 mb	30 pin	19
16/32 mb	72 pin	27/47
64 mb	72 pin 6100/Sampler	93

SOFTWARE SPECIALS!
Mac®OS 9	$ 85
Mac®OS 8.1 CD only	25
Mac®OS 8.6 w/free 8.5 CD	59
Norton Antivirus 6.0 CD only	25
Norton Utilities 4.0	29
Norton Utilities 5.0	59
Quark Xpress 4.1	749
Final Draft™ 5.0	199
IBM Via Voice	75
Adobe Photoshop 5.5	589

*** At Press time the Memory market was *extremely* volatile. Please call for the most up-to-date prices.

WE BUY, SELL & TRADE MACS!
CALL (800) 80-WE-BUY for a quote

AppleCare® and Apple® Software Available. Call!

MacSolutions, Inc. 11933 Wilshire Boulevard, West Los Angeles, CA 90025 Fax: (310) 966-4433
University & School P.O.'s Welcome Note: All prices are subject to change. Limited to stock on hand. #601

Secure Online Ordering or Call Toll-Free (800) 873-3RAM

www.macsolutions.com

MAC Solutions

Software Specials ***QuarkXpress4 $649***

Apple MacOS7.6/8/8.1/8.5/9 $49/55/59/69/89
Act V2.8/Acrobat V3/V4 $129/$99/$189
AntiVirus5/SAM V4/Apple UtilitiesCD $49/29
Bryce3D/4/ 3D Suites $99/125*/379
Claris EMailer/DRAW/Calendar Maker $69 ea.
Claris Works V4/5/AppleWorks $49/59/89
Claris Impact/Organizer/HomePage $69 each
Corel DRAW 9 / WordPerfect V3.5 $329/$75
Director V5/Studio/6/Studio$199/389/489/589
DeBabelizer V3/ Dantz Retrospect4.1$199/99
Extensis MaskPro2/PortFolio $199/109
Extensis Preflight Pro/ PhotoGraphics $269/99
Extensis PhotoTool3/QXTool4 $129/129
FileMakerPro.V2/4/4.1/Server3$49/99/169/589
Final Cut Pro/FlightCheck/Upg. $949/$355/85
Flash 4/ Freehand 8/DreamWeaver2 $249 ea.
Fontographer V4/Freehand V5 Studio $199 ea
Freehand V8 Upgrade only $ 99
FrameMakerV5/V5.5/FWB CD Tool$389/489/39
FWB Hard Disk Tool Kits PE/V 3 $39/89
GoLive4/Infini-D V4/4.5 $279/369/439
Illustrator V5.5/6/7/Fireworks V2 $89/189/159
Kai's PowerTool LE/V3/V5 $29/69/95
Microsoft Office4.2.1/97Pro. $149/199
MicrosoftOffic98Upg./98/2000$99/199/$389
MediaCleanerPro4/QuarkXpress4$389/649
Norton Utilities/Anti-Virus Bundle $79 both
Norton Utilities V3.5/4 NetObject $39/49/89
Painter3/4/5/5.5/FrontPage $69/99/149/229/99
Pantone Color Drive/Color WEB $69 each
PageMaker V5/6/PhotoFlash $189/289/89
Persuasion V3/V4 PowerPoint98 $99/189/189
PhotoFrame Vol 1/2 $89 ea. $159 both
Premiere LE/V3/V4/PhotoDlux$89/189/289/25
Poser V2/3/4/QuarkXpress4 $79/139/229/649
Quick Book Pro V4/Quicken 7 $179/35
RayDream 3D/Studio V5/5.5 $89/189/289
SuitCase3/8 StuffIt Delux5 $25/$79/59
SoundEdit16+DEC II/SwimSuit CD$199/249/29
StrataStudioProV2/V2.5 /V-Shop $489/635/49

Apple G4 - $1489
G3/266 DT/MT-SCSI/Floppy/Serial$989/1489
G4/400/450/500MHZ $1489/1889/2959

JAZ/ZIP, Hard DR. & CDR
400MB/1GB/2GB/3GB $99/159/189/209
4GB/6GB/9GB/18GB $259/329/369/489

Manager Specials
***UMAX PowerLook 3000**
W/Transparency *$4889*
***SuperDrive USB Ext.$95**
***Epson 5000 Color Printer**
- Color Proof **$2689**

Jaz ext. Dr. 1GB/2GB $199/$339
Zip Dr. w/Cart. Int. / Ext. $109/$125
Teac 6X/24X w/Toast $299
Yahama CD-RW 6X/4X/16Xw/Toast $349
Apple DVD-ROM Dr. w/MPEG Decorder $399
DVD-RAM 5.2GB SCSI $779

COMBO Drives:
9GB + CD-R Ext. SCSI $699
18GB AV + JAZ + CD-R $1099
JAZ+ZIP $289

Tape Ext. Drive
SDT2000/4000/5000 $199/399/499
SDT7000/9000/10000 $599/799/989
DLT 30/40/60GB $1189/1489/1989
USB Drive - 3GB/4GB/6GB $99/149/199

Super RAID- Quantum/Seagate
SCSI Case HH/FF $29/49*
- 8GB/18GB RAID - $ 489/ $789
- 36GB/54GB RAID - $ 1289 / $1989
- ***72GB / 108GB RAID - $2989/$4999***
- 144GB/216GB RAID - $5589/$7989
- **288GB RAID - $ 11899**

Iomega
1.0GB Jaz $75
100MB Zip $10*
SyQuest
44MB/88MB $25/35
200/270MB $49/59
EZ135/230 $29/39
SyJet 1.5GB $95
M.O. Cart.
128/230MB $8/12
640/650MB $29/34
1GB Tahiti $89
1.2/1.3GB $49/59
2.6/4.6GB$149/189

Close-Out
***Targa 2000**
Pro/RTX$2489/3889
***Apple 20" Color**
Monitor $589*
***64/128MB**
PC133 - $75/159
*SyQuest 270/200MB Ext. Drive $249/199
*Fujitsu 230MB MO / WANG DAT $199 ea.
*SONY 650MB/1.3GB M.O. Dr. $589/989
*AUTOCAD 14 $989
Canvas V5/V6 $249/339
*Conflict Catcher V3/4/8 $39/59/67
*M.S. WIN95/98/Project 98 $69/99/289
*M.S. Words V5/V6/98 $89/189/269
*WordPerfect3.5/Windows98 $75/95

Fax: 310-782-5974
http://www.imagesolutions4U.com
E-Mail: Imagesol 4U@ AOL.com
385 Van Ness Ave. #110 • Torrance, CA 90501
Image Solutions
800-352-3420



Herman Miller Aeron Chair

www.sittingmachine.com

800-883-9697

iMacButton™

Got a Freeze? Get an iMac Reset Button!

Summer Sale
Buy an iMacButton, Get one Free
No Limit!

Reset Different!™

Credit Cards * Government PO's * Checks

Order online
www.iMacButton.com
7081 N Marks #104 283 Fresno CA 93711
559-438-8601 Fax 559-435-2511

www.iMacOutfitters.com



iMate
UNIVERSAL ADB TO USB ADAPTER
Easily Connects Any ADB Device
To USB-Equipped iMac or PC Computer

The innovative iMate USB to ADB adapter allows users to easily connect their existing ADB peripherals to iMacs, Macs with USB cards, and PCs with USB. The iMate is compatible with any ADB device including mice, keyboards, trackballs, trackpads, hardware dongles, and AppleVision displays.

Retail price $39

80 Fesslers Lane • Nashville, TN 37210
615.255.0990
info@griffintechnology.com
www.griffintechnology.com

GRIFFIN TECHNOLOGY

The gPort universal serial adapter is the perfect companion for your new blue G3 computer. Designed from the ground up with the G3 in mind it supports every serial device that works on your older Macs.



• Easy to install • Economical • Cost Effective

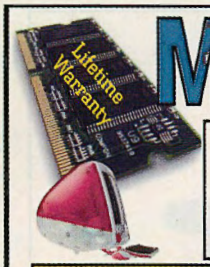
gPort
THE SERIAL SOLUTION

With the new G3s Apple has made a bold move to faster and more universal i/o interfaces. The gPort provides a great transition for people with existing serial equipment.

Retail price $49



MEMORY



Lifetime Warranty on all MEMORIES.
Super Deals on iBook & G4 Memory

We Have The Best Deals On PowerBooks Batteries!

iMac 233-333MHz

32/64MB	$49/75
128MB	$139
4MB VRAM	$30

G3/G4 PC100 iMac 350-450MHz

64MB	$69
128MB	$119
256MB	$259

168 PIN EDO/FPM DIMM

32/64MB	$89/179

72/30 PIN SIMM

16/32MB 72 Pin	$45/89
4/16MB 30 Pin	$9/29

PowerBook G3/iBook

32/64MB	$49/75
64MB	$49/75
128MB	$139
PB 1400 24/32/48MB	$89/119/179
PowerBook 3400/5300	CALL

2.5" Notebook Hard Drives

TOSHIBA	2.1GB IDE	$145
TOSHIBA	4.3GB IDE	$179
TOSHIBA	12GB IDE	$269
IBM	6 GB IDE	$220
IBM	12 GB IDE	$269

eritech INTERNATIONAL. INC.
213 North Orange St., Suite C, Glendale, CA 91203

CALL Toll Free 1-888-808-6242
Phone:(818)244-6242 FAX:(818)500-7699
www.eritech.com
e-mail:eritech@sprynet.com
Prices Are Subject to Change without Notice! Prices effective June/01/00

1-800-4-MEMORY

LAPTOP - DESKTOP - CAMERA

MEMORY

WE CAN BEAT ANY PRICE ON ANY MEMORY FROM ANYONE PERIOD !!!

SHOP FIRST, THEN CALL US

NO RE-STOCKING FEE - MAJOR BRANDS
BRAND NEW PARTS - FREE TECH HELP

SPECIALS ON THE WEB
WWW.18004MEMORY.COM

Local: (303) 571-1900
Fax: (303) 571-5020
Hours: M-F 8-6 MST

MediaGuide

Your #1 Macintosh Source!

Power Computing BLOWOUT!!!
PowerCurve 120 32/540/CD.....$279
with 15 monitor, kb, mouse.....$379
• Upgradable CPU • 3 PCI slots • Built-in ethernet •

New Sony 24x SCSI CD-ROM
Internal.....$79
External.....$109
w/ FWB CD-ROM Toolkit

GRAB BAG o DEALS!

Apple 10/100 PCI Ethernet card	$49
Apple 14 Color Plus display	$89
Apple Microphone (either style)	$7
6100 486 DOS card (w/software)	$39
External HD case (w/cables)	$25
10 Base-T transceiver	$19
Deluxe Notebook Backpack carrying case	$29

UNBEATABLE DUO DEALS!

Duo 270c 32/320/14.4	$219
Duo 280c 40/750/14.4	$299
Duo 280c 40/1gig/14.4	$349
Duo Dock I (w/lid upgrade)	$89

PLEASE BUY FROM US SO WE CAN AFFORD TO HIRE A NEW AD DESIGNER!

HOT Bundle specials!
(Listed CPU plus a 13/14 monitor, kb/mouse)
IIci 8/425...$169 • IIsi 9/230...$159 • IIvx 8/425..$179
Quadra 650 16/425/CD...$239 • Q630 20/250/CD..$219
6100/60 24/350/CD...$299 • 7100/66 40/425/CD...$349

NEW Powerport Mercury 19.2 internal modem for Powerbook 5xx $29

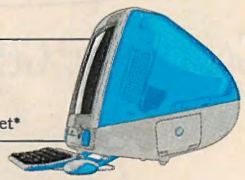
Norton Utilities 4.0 $19
Mac OS 8.5 $39
1 Gig SCSI HD $69
Mac OS 8.1 $29

SHOP ONLINE!
NEW • USED • PARTS • RAM • PERIPHERALS & TONS MORE
www.MediaGuide.com
Secure online ordering • No CC surcharges

Not online? No problem! Call (888)466-2271

MacSales
1-888-MACSALES
Buy • Sell • Repair • Parts
1-888-622-7253
www.macs4sale.com

iMacs starting at $599
• 32mb Ram • 56k Modem
• 4 - 6gb Hard Drive • Built in Ethernet*



Computers

iMac 233	32/4gb/CD/56k	$599
iMac 266	32/6gb/CD/56k	$679
iMac 333	32/6gb/CD/56k	$749
PMac 6100/66	16/230/CD	$149
PMac 6200/75	32/1GB/CD	$299
PMac 7100/80	16/500/CD	$299
PMac 7200/75	16/1GB/CD	$299
PMac 8100/80	32/500/CD	$299
PMac 7500/100	16/500/CD	$399
PMac 7600/120	32/1G/CD	$499
PMac 8500/120	32/2G/CD	$599
PMac 9500/200	32/4G/CD	$699
PMac 8600/200	32/4G/CD	$699
PMac G3 233	32/4G/CD	$899

Powerbooks

Powerbook 520	12/160/M	$299
PB 3400c	144/2G/CD/Floppy	$999

Laser Printers

Laserwriter IInt	$199
Personal Lw 4/600 600DPI	$299
LW Select 360 600DPI	$399
LW Pro 630 600DPI / Ethernet*	$399
Personal Laserwriter LS	$159
Laserwriter Toner - from	$39

Monitors

13" Apple RGB Monitor	$69
14" Apple Color Display	$99
15" Apple Multiscan	$159
17" Apple Multiscan	$249
20" Apple Multiscan	$399

Extra's

56k Ext Fax Modem -New-	$79
Duo Dock with Lid Upgrade	$59
System 8.1 OS CD ONLY	$29
Imation USB Ext Floppy -New-	$99

Call or visit our website at: www.macs4sale.com for latest prices and specials.
In Arizona 480-368-5770 Fax 480-368-5480 Mon- Fri 8:00-5:00 MST

School PO's Welcome. Prices reflect a 3% cash discount. Prices subject to change. All sales final. Returns at managers discretion & subject to min. 15% restocking fee. Products are used with 90 day warranty.

(925) 689-9488: Voice • (925) 689-9487: Fax
ALL PRICES SUBJECT TO CHANGE

Mac·Res·Q.

Make Your Wallet Happy and Point Your Browser Here!--->>>>

MacResQ.com

bizrate.com customer certified

PowerMac 7300/200 32 / 2Gig / 8xCD Only $499 CPU Only

G3/400 Blue & White 128 / 9 Gig UW / 32xCD: $1399

LaCie CDR/CDRW Blowout!

96 / 2 Gig / CD / 56K / 14.1" 512K Cache: Only $1599!

NORTON AntiVirus 6.0 For Mac: Only $19!

2x6x CDR: $119 2x2x6x CDRW: $189
4x8x CDR: $149 4x2x8x CDRW: $199
8x20 CDR: $199 4x4x16x CDRW: $219
External, With Toast, Cables and Manuals!

Systems

G4 Systems In Stock!
Beige G3's:from $999
(desktop & towers in stock)
iMac's Start @ $699
9600's Start @ $999
PM 8600/300's $599
PM 8500/120's $499
PM 8500/100's $419
PM 7300/200's $499
PM 7600/120's $399
PM 7500/100's $399

Resellers • Call For Discounts!
More Stuff Arrives Daily! Call or Click Today!

PowerBooks

iBook $1399
2400c IN STOCK! $1249
G3/400 SCSI $2349
G3/333 $1999
G3/300 $1999
G3/266 $1899
G3/233 Start @ $1199
PB3400 Start @ $999
PB 1400c's from $899
PB 1400cs's $799
PB 5300 Start @ $599

Monitors

Apple Studio Displays: NEW!
15" Graphite: $999
17" Graphite: $349
Apple 17" Displays On Sale For Only--> $199!
LaCie 19": (blue) $549
LaCie 24": $1299

LaCie Electron 22" Displays Only $999!

Parts, Parts, Parts!

PowerMac Logic Boards Start @ Only $29!
PowerBook Logic Boards Start @ Only $149!
PowerBook Color Screens Start @ Only $99!
PowerMac Power Supplies Start @ Only $79!

We Stock PARTS! If we don't have it, we can source it for you. Just call or email to sales@macresq.com

Call Us: 1-888-447-3728

15% re-stocking fee on functional returns • No returns after 30 days • All items are refurbished unless noted as new

Got Ink?

OPEN 24 HOURS

3-Black 3-Color 6 Pack Special* EPSON starting at $49.99

www.Ink4Art.com

*For EPSON Stylus Series Printers. Pricing excludes Stylus 900,1200,3000,5000

ink4art® WWW.INK4ART.COM

Serving Great Deals on Ink Jet Products.

- Ink Jet Cartridges
- Specialty Papers
- Specialty Inks
- Unique Mac Products

Standard Inks: Fits Epson Series

INK4ART BRAND CARTRIDGES fits EPSON
Black-400,440,600,640,700 $14.99
Black-740,800,850,1520..... $15.99
3 Color all above models..... $18.99
Photo Color Photo, Photo EX, 750,700..... $18.99
Made Fresh Daily
New Improved Inks Inks!

Specialty Papers:

Paper Canvas
10 pack..... $9.99
100 pack..... $49.98
Waterproof Photo Glossy
10 pack..... $9.99
100 pack..... $29.99
Inkjet Transparency Film
50 pack..... $19.99

Call for pricing on cartridges for Canon printers.

iBookBag

New!

iPen light NOW ONLY $9.99

Only $49.99

1-877-695-1477

VISA MasterCard DISCOVER

©2000 Ink4Art is a division of Eyecon Marketing, Inc. Sarasota, Florida

BUSINESS INDIVIDUAL EDUCATION

your used Mac complete resource

Point your browser to www.macofalltrades.com and make your way to our SPECIALS PAGE updated daily for our hottest deals on in-stock items



Refurbished and tested

Mac-savvy advisors

Best Prices

MAC OF ALL TRADES

800.304.4639

Direct: 404.355.5668
Fax: 404.355.5461
500 Bishop Street, Suite E-3
Atlanta, Georgia 30318

www.macofalltrades.com

Great Mac Softwear!



Upgrade today!
Exclusively online:

www.prepressmiami.com/ok

DATA RECOVERY: 800-440-1904

7 good reasons to choose DriveSavers:



1. Fastest, most successful data recovery service available.
2. Recommended and certified by **all** drive companies to maintain your warranty.
3. Advanced, proprietary recovery techniques.
4. 24-hour, onsite, and weekend services.
5. Retrieve recovered data instantly with DATAEXPRESS™ over high speed secured Internet lines.
6. Featured in Mac Addict, Macworld, Mac Week; also by CNN, BBC, Forbes, and many others.
7. Federal and State Contracts.

"We Can Save It!"

DRIVESAVERS DATA RECOVERY

Since 1985
www.drivesavers.com

Visit DriveSavers at MacWorld, New York #1855

©2000 DRIVESAVERS, 400 BEL MARIN KEYS BLVD., NOVATO, CA 94949 INTL: 415-382-2000 FAX: 415-883-0780

Mac POWER
Sales & Service, Inc.
BUY · SELL · TRADE
UPGRADE · REPAIR
New · Used · Refurb.

- Powrbooks
- PowrMacs
- Performas
- Quadras
- MacII-LC
- Monitors
- Printers
- Peripherals
- Ram
- Parts
- Software
- Accesories

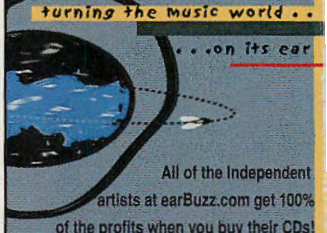
www.macpowerinc.com

888-275-POWER
Fax: 408-448-6132
1080 Blossom Hill Road #E
San Jose, California, 95123

earBuzz.com

turning the music world . . .

. . . on its ear



All of the Independent artists at earBuzz.com get 100% of the profits when you buy their CDs!

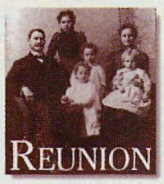
earBuzz.com, "supporting independent artists 100%!"

50% off CDs daily FREE artist sign-up MP3s

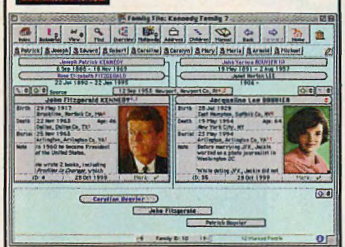
NEW VERSION

REUNION® 7

Reunion 7 is the perfect tool to organize your family history. Plenty of room for names, dates, places, stories, notes, tidbits, and sources. Include all your favorite pictures, sounds, and home movies. Automatically build multimedia web pages to share your family history on the Internet! Print large, colorful tree charts, timeline charts, and fan charts for family reunions. Fun and educational for the whole family. Reunion 7 includes 80 new features and enhancements!



Mac ADDICT RATED FREAKIN' AWESOME!



Leister Productions
PO Box 289, Mechanicsburg, PA 17055
phone 717-697-1378 *fax* 717-697-4373
e-mail: info@LeisterPro.com
web site/demo: www.LeisterPro.com

To order, call
MacConnection 800-800-2222

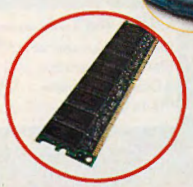
Macs4U.com

Secure Online Ordering

Today's hottest products for your MAC

Call NOW for Our Best Deals!





MEMORY

Check Our Website TODAY for the Latest Prices!

Our specialists can answer your questions and help you make the product selection that fits your specific needs.

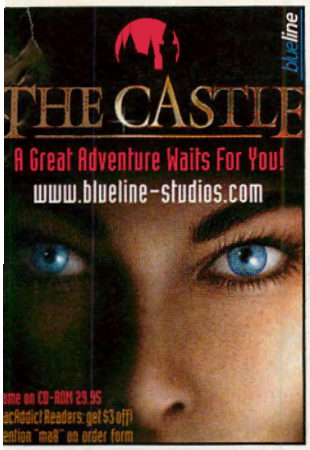
800.224.5899

GET THE BEST PRICE ON PRODUCTS YOU SEE FEATURED IN MacAddict

SeeMeBuyMe will connect you to all online merchants carrying the products you see in this magazine, so you can compare prices, get the best deal, and buy it fast! Call or click.

SeeMeBuyMe™

www.seemebuyme.com
888.220.1146





call for your free catalog

Save time. Save money.

ARTGRAFIX®
the design professional's warehouse

TO START SAVING TODAY CALL 1 (800) 443-4421
OR VISIT US AT WWW.ARTGRAFIX.COM

G3/iMac Parts In Stock!

800-WE-FIX-MACS
Free Diagnostics • Best Prices • Best Warranties • Huge Inventory

Logic Boards:
6400, 6500,7500,8500, 8600,9500,9600
From $199

iMac G3 Logic Board
From $199

G3 MiniTower from $1099
6100 from $79
7100's from $129

PowerComputing Specialists

To See Daily Specials Go To
www.AllMac.com

G3 400Mhz Zif CPU $299
Apple 4gb Scsi HD $149
Apple 2gb Scsi HD $89
Apple 24x CD Rom $129

2202 N. First Street San Jose, CA 95131 • 800 933-4962
Repair • Upgrade • Buy • Sell • Trade New • Used • Refurbished

ACADEMIC DISCOUNTS
Super Savings for Students, Teachers, & Schools!
Super Bundle 1: Dreamweaver 3 & Fireworks 3 only $144!
Super Bundle 2: Freehand 9 & Flash 4 just $144!

Canvas 7	$189	Filemaker Pro 5	$148	Norton Antivirus 6	$39
Coda Finale 2000	$199	Fireworks 3	$98	Office 98	Call!
CodeWarrior Pro 5	$109	Flash 4	$98	**Painter 6**	**$199**
Deneba CAD	$249	Form•Z	$849	Sibelius	$229
Director 8	**$329**	Freehand 9	$98	TechTool Pro	$79
DreamWeaver 3	$98	**Lightwave 6**	**$789**	Vectorworks 8.5	$329
ElectricImage	$639	MacLink Plus 11	$69	Wacom 4x5 Tablet	$79
		MediaCleaner	$279	*(PC titles also available!)*	

Visit AcademicSuperstore.com for online ordering & tons of other products!
Free Catalog!
1-800-294-4035
Fax PO's and ID's to 512-450-0263
ACADEMIC SUPERSTORE
www.AcademicSuperstore.com

Take Control!
Remote Control for PowerPoint, QuickTime, DVD, CD, & MP3 Software!

"Flawlessly controls every supported application..." - MacAddict Feb 2000

MAC ADDICT RATED
FREAKIN' AWESOME!
www.macaddict.com



Digital Media Remote
USB remote control for PowerPoint, DVD, CD, & MP3 software players ($79)

USB Twin Serial Adapter
Add 2 Mac serial ports to your USB Mac
- For use with tablets, PDAs, cameras & many printers
- Two ports for the price of single port solutions! ($79)

Macworld

USB PDA Adapter
Connect Palm organizers to your USB Mac or Win98 PC ($39)

USB 4-Port Hub
Connect more USB devices to your USB Mac ($39)

Keyspan USB Card
Add 2 USB ports to your PCI PowerMac ($39)

KEYSPAN
www.keyspan.com
(510) 222-0131

COMPU AMERICA "The Computer Specialist"
1-800-533-9005
Fax Bids: (310) 475-7744 or
e-mail at SALES@COMPU-AMERICA.COM
10435 Santa Monica Blvd., Los Angeles, CA 90025

Check out our Web!
WWW.COMPU-AMERICA.COM

Government, University and Fortune 1000 P.O.'s are welcome! Business Leasing is Available!
International Orders Please call tel:(310) 446-1771 We are open Mon-Sat, 9am-6pm

POWERMACS
Starting at $999

G4/500MT . . 256/27G/DVD/ZIP	.3299
G4/450MT . . 256/27G/DVD/ZIP	.CALL
G4/450MT . . 128/20G/DVD/56K/ZIP	.2299
G4/400MT . . 128/20G/DVD/56K/ZIP	.CALL
G4/400MT . . 64/10G/DVD/56K	.1499
G4/350MT . . 64/10G/DVD/56K	.CALL
G3/400MT . . 128/12GIG/24XCD/ZIP	.1499
G3/450MT . . 128/9GIG/CD	.1299
9600/300 . . . 64/4G/24X	.1699*

WORKGROUP SERVERS

G4/500 256/18G/DVD/SHARE	.4199
G3/450 256/2-9G/24X/SHARE	.2299
G3/350 128/9G/24X/SHARE	.1799
CALL FOR OTHER WORKGROUP SERVERS.	

I-MACS
Starting at $749

I-MAC G3/400 128/13G/DVD/56K(GRAPHI)	1499
I-MAC G3/400 64/10G/DVD/56K	.1199
I-MAC G3/350 64/6G/24XCD/56K	.999
I-MAC G3/333 32/6G/24XCD/56K	.799*
I-MAC G3/266 32/6G/24XCD/56K	.749*
I-MAC G3/233 32/4G/24XCD/56K	.CALL

All Flavors Are In Stock!
(Blueberry, Strawberry, Grape, Lime, Tangerine,)

I-BOOKS
Starting at $1199
12.1 Active TFT Color Screen, 20xCD, 56K Modem

I-BOOK G3/300 64/6G Graphite	.1625
I-BOOK G3/300 64/6G Blueberry	.1442
I-BOOK G3/300 32/3.2G Blueberry	.1329
I-BOOK G3/300 32/3.2G Tangerine	.1199

G3 POWERBOOKS
Starting at $1099
Call for all other PowerBooks. (5300cs, 5300ce, 1400cs, 1400c, 3400c

G3/500 128/12G/DVD/14.1 TFT/56K	.3299
G3/400 64/6G/DVD/14.1 TFT/56K	.2399
G3/333 64/4G/24xCD/14.1 TFT/56K	.1999
G3/300 64/8G/DVD/14.1 TFT/56K	.CALL
G3/266 64/4G/CD/14.1 TFT/56K	.CALL
G3/233 32/2G/CD/12.1 TFT/56K	.CALL

HEWLETT PACKARD

1100Xi/1100AXi	.349/379
3100Xi/3150Xi	.499/549
2100M/2100TN	.625/899
4000N/4000TN	.999/1299
4050N/4050TN	.1240/1376
4500N/4500DN	.2299/3199
4050USB	.CALL
5000	.1250
5000N/5000GN	.1879/2133
8000N/8000DN	.1999/2499
8100N/8100DN	.2549/2799
8500/8500N	.3299/3999
8500DN	.5575
8550/8550N	.CALL
8550DG/8550DN	.CALL

EPSON
Starting at $70
STYLUS COLOR Printers

440(PC ONLY)	.70
740	.149
740I	.179
900/	.299
900N	.479
PRO-XL	.199*
1160	.399
3000	.799*
5000	.2329

YOUR #1 COMPUTER SUPERSTORE!
All prices are cash discounted. * denotes a refurbished product. Not responsible for typos. Apple, the Apple logo, Mac, Macintosh, PowerMacintosh, PowerBook, WorkGroup, iMac, & iBook are trademarks of Apple Computer, Inc., registered in the U.S. and other countries. All other names & logos are trademarked by their respective owners. We are Not Apple Authorized.

shut down

Are you laughing, or do you need the maneuver?

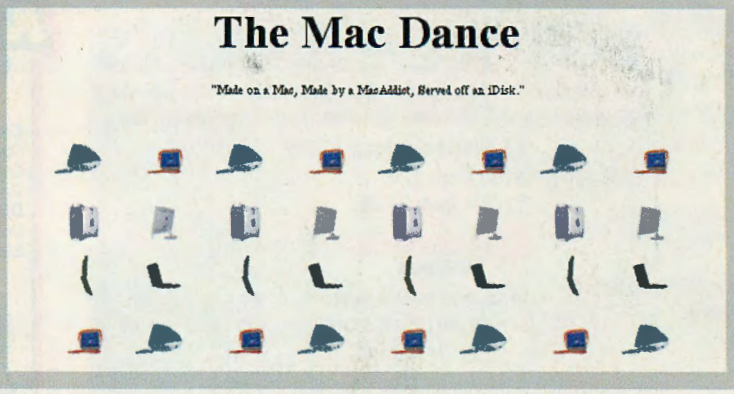
Bingo-Bingo-Bingo

MacSoft's Bingo•Bingo•Bingo (see *Reviews*, this issue, p67) ships with several variations on the traditional bingo game. Here are the five follow-up games to Bingo•Bingo•Bingo we'd like to see for more advanced players.

- **Mortal ComBingo:** "I-43—Finish him!"
- **Quake III Bingo:** Choose one of ten lethal numbers to frag other players before they can get five in a row.
- **Rusty Razorblade Bingo:** Players try to give each other tetanus with jagged metal playing pieces.
- **Telepathic Bingo:** Players put pieces on their boards before any numbers get called.
- **Dingo Bingo:** Players use cards and chits to save their babies in the Australian outback.

Too Much Time on His Hands

As if the Hamster Dance wasn't bad enough (if you haven't seen it, visit http://www.hamsterdance.com), a Mac-loving lunatic has come up with his own addictive version. It's at http://homepage.mac.com/pkelleher/macdance.html, and it's worth a look just for sheer horror value.



Steve Jobs's Favorite Knock-Knock Jokes



Knock knock.
Who's there?
Orange.
Orange who?
Orange you glad I didn't say Apple lost $768 million this quarter?

Knock knock.
Who's there?
Steve Jobs.
Steve Jobs who?
You're fired.

News Stories We Thought We Read Somewhere

Some Internet Content May Lack Literary Quality

Researcher Declares Stephen King largely responsible for the information superhighway's descent into filth

STUCKIES, ME—After the release of Stephen King's latest novel *Riding the Bullet* as an e-book, literacy expert Paul Stickbutsky predicted the fall of the Internet as a surviving literary haven.

"Pretty soon, trashy novels and pornography will fill the Internet," Stickbutsky said, citing public libraries as examples.

The Internet had no comment.

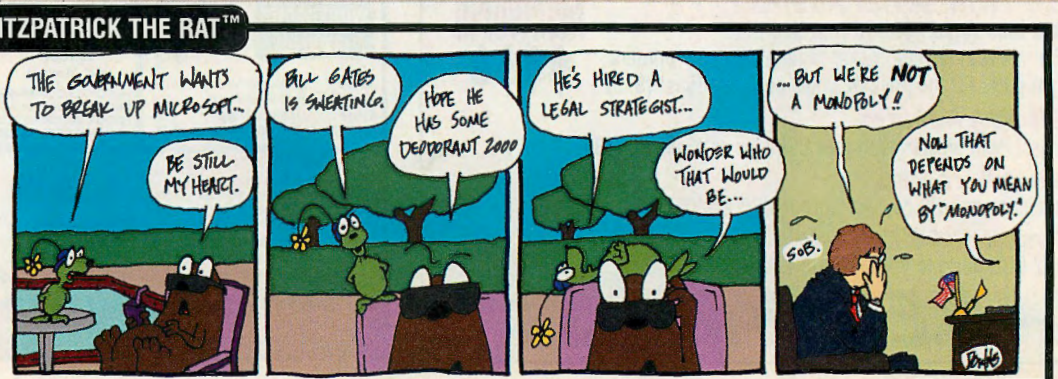
Smart Saws on the Way

IBM showcases new line of Internet-connected power tools

FISHKILL, NY—Following IBM's successful unveiling of a new Internet appliance, the company is reportedly considering a new class of power tools—such as drills and saws—that can communicate via the Internet. The new tools would be cordless and could, for example, look up the nearest hospital's Web page in the event that a user lops off an appendage or drills a hole in his or her hand.

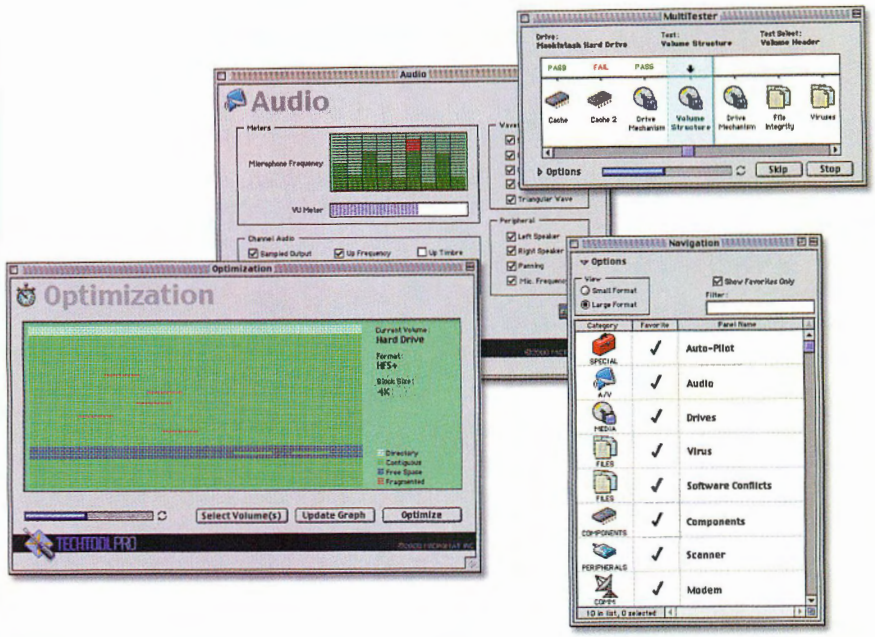
Enraged Apple attorneys reportedly plan to sue IBM over the use of the word *tools* as soon as the courts resolve the patent dispute over whether Amazon.com owns the concept of tools.

FITZPATRICK THE RAT™



Visit the Fitzpatrick archive at http://www.insanely-great.com/comic/index.html. BY CHUCK DOWNS

There's only one utility in the world that does more for your Macintosh than TechTool Pro 2...



...Introducing TechTool Pro 3

SEE US AT MACWORLD NY EXPO BOOTH #355

MicroMat's disk repair and Macintosh troubleshooting utility just became a whole lot better. Besides repairing drives, recovering data and checking the health of your Macintosh components, TechTool Pro 3 can now help protect you against virus problems and software conflicts. Version 3 also sports a new modern interface. But the real power of TechTool Pro 3 isn't in the features you can see, it's in the features you can't see. Like a multitude of new drive repair routines that can save data that other utilities would simply abandon. An improved recovery system that will find lost files in the darkest caverns of a damaged drive. You'll also find improved performance on key features like disk optimization. Simply put, TechTool Pro 3 is the most complete and powerful troubleshooting utility available for your computer. Why settle for anything less?

Micromat Inc.
800-829-6227
707-566-3831
FAX: 707-566-3871
info@micromat.com
www.micromat.com

Fix different.™

MacHome Journal's Home Choice 1999

mac today EDITORS' CHOICE '98

MacAddict RATED SPIFFY!

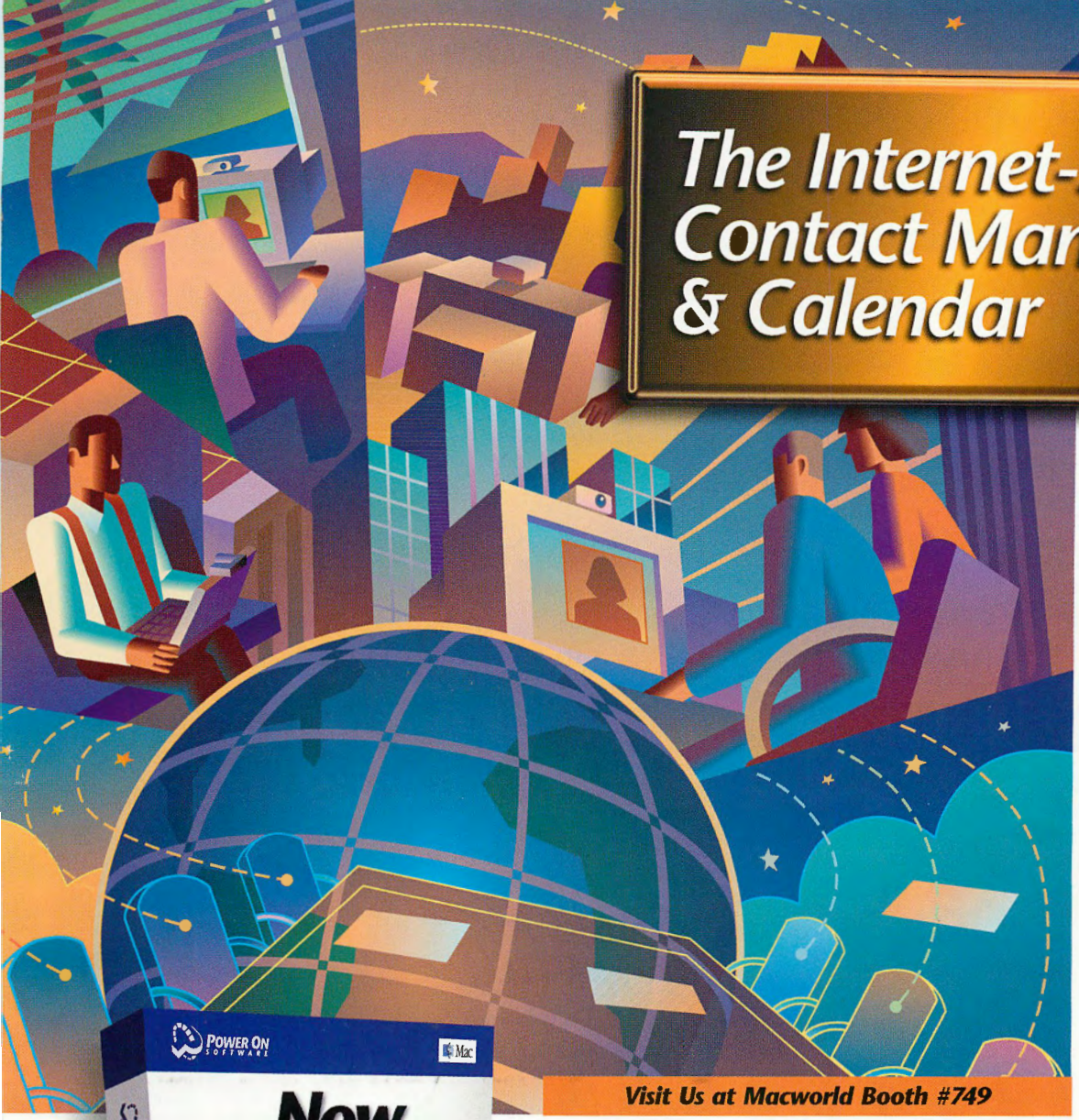
MacWorld Aug. 1999

TECHTOOL PRO

Order the complete package of version 2 now and recieve a free upgrade to version 3.
Some restrictions apply. Offer subject to change without notice.

©2000 Micromat, Inc. All rights reserved. TechTool is a registered trademark of Micromat, Inc. Fix Different is a trademark of Micromat, Inc. Macintosh is a trademark of Apple Computer, Inc.

The Internet-Savvy Contact Manager & Calendar



NEW VERSION!



WITH OS9 AND PALM SUPPORT

Visit Us at Macworld Booth #749



Whether you drive a desktop Mac (even a trusty old 68K machine running System 7), pound a PowerBook, or pack a Palm®, you need Now Up-to-Date & Contact, the best choice in contact management and calendaring.

No other product allows you to keep track of your contacts and schedule so easily. With its ability to recognize common phrases and automatically enter items on your calendar, you will spend less time on data entry. Built-in email tracking; word processing with mail merge; label and envelope generators with postal bar codes; and alarms to remind you of key events make this an essential product for anyone who needs to save time and stay organized. A built-in TCP/IP server allows you to add users and share group data, while keeping personal information private. Designed for the Internet, Now Up-to-Date & Contact offers a unique web plug-in architecture that will have you soaring through cyberspace.

Need a map or an e-mail address for someone? Click the blazingly fast search engine to find the contact and let the software do the rest! It is no wonder that Now Up-to-Date & Contact is the #1 best-selling Macintosh PIM on the planet.



iMac, iBook, G3 & G4 COMPATIBLE

POWER ON SOFTWARE

The POWER of Productivity.

Phone: 800-344-9160 ■ 614-413-4000 ■ Fax-614-413-4100 ■ http://www.poweronsoftware.com

Copyright ©1999 by Power On Software, Inc. All rights reserved. Now Up-to-Date and Now Contact are registered trademarks of Power On Software, Inc. Macintosh is a registered trademark and Finder is a trademark of Apple Computer, Inc. Palm Computing is a registered trademark and Palm V is a trademark of Palm Computing, Inc., 3Com Corportation, or its subsidiaries. All other trademarks acknowledged.